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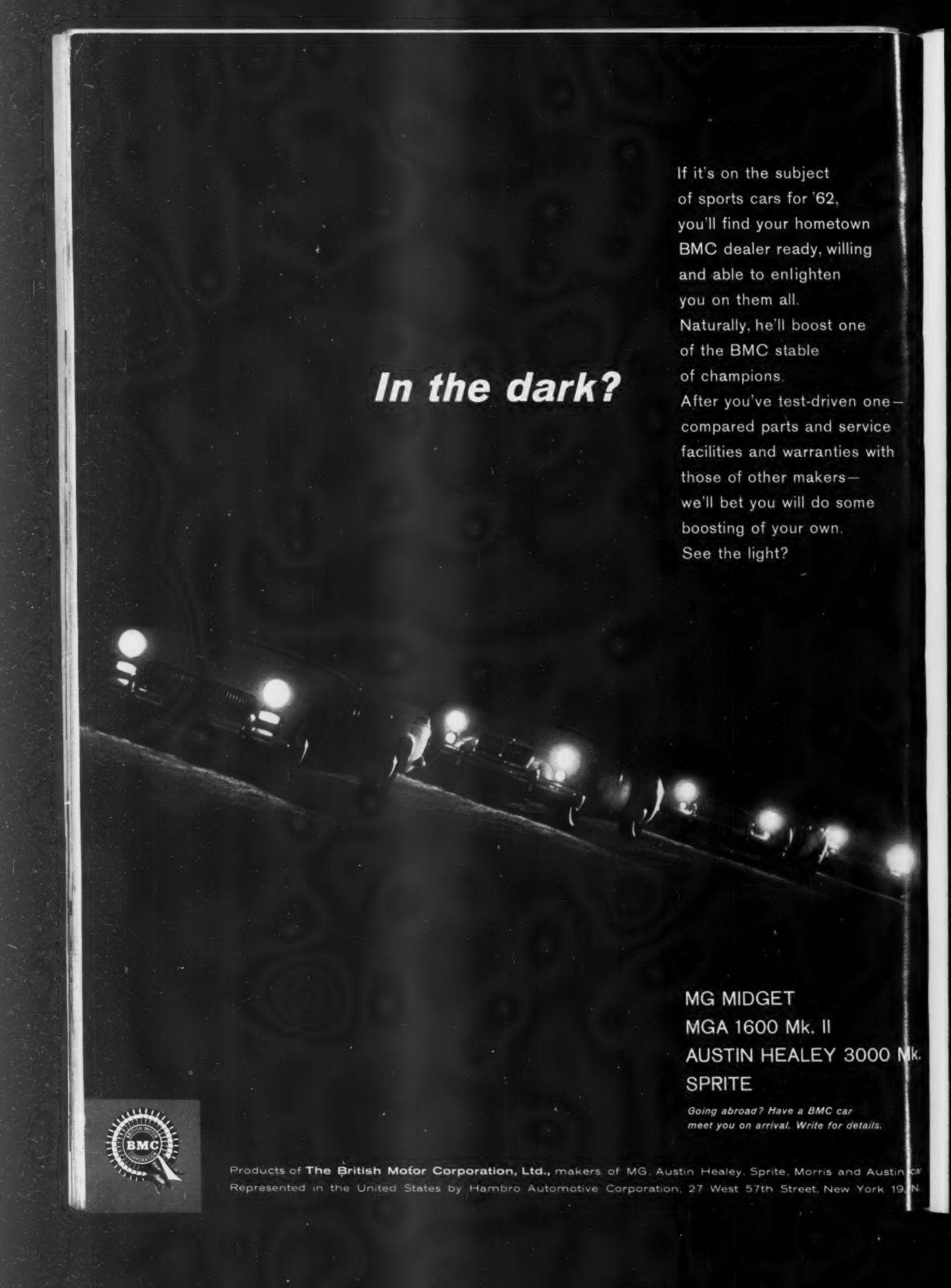
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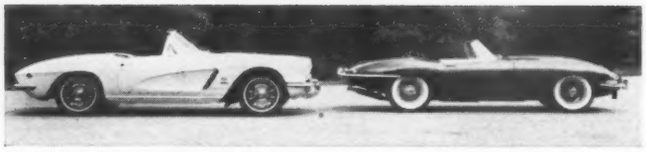

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CAR AND DRIVER

DECEMBER 1961 • VOLUME 7 NUMBER 6

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THIS MONTH'S COVER: Bob Behme took a towering stance for this photo of Norm Holtkamp's superb transporter. It's carrying a Willment sports car.

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CRASHBOX
with
Karl Ludvigsen

PROGRESS REPORTS—Finally we have been able to resolve our inter-office arguments and come up with the winners of the Body Design Contest. It was extremely difficult to judge because there were so many entries of high style and technical quality, but we were able to reach a satisfactory settlement after a few late-night struggles and artful compromises between appearance, as championed by Gene Butera, and machinery, as critically dissected by Jan Norbye.

I personally was disappointed that there weren't more entries that combined merit in both engineering and appearance. There were a number that appeared to accomplish this, but on closer examination the technical innovations usually proved to be ill-founded. From the winning entries, though, there's no doubt Briggs Weaver's fine chassis could be handsomely and efficiently housed.

TURBOCHARGING PREVIEWS—In this column of September, 1960 I brought you up to date on turbo-supercharging, suggesting it might be ideal for the new aluminum engines. It's heartening now to see that Oldsmobile has made an early announcement of its turbocharged V8 project, to be available soon on the F-85. As soon as full details can be released on this, Roger Huntington will report them straight from Lansing.

In the meantime, we can note that the turbocharger is made by the Garrett Corporation, and that the engine runs at its powerpack compression ratio—unusually high for a blower of any kind. An explanation can be found in Bill Carroll's pioneering story on Detroit's turbocharger work, in the September, 1957 SCI. Bill quoted Dr. Peter Kyropoulos, then with California Tech and now with GM Styling: "Any turbocharger is a swap between compression ratio and boost pressure. But you will not have to lower the compression ratio if mechanical octane numbers are designed into the cylinder head. You can retain high compression for economy at part throttle—then turbocharge for maximum power."

These were prophetic words. Dr. Kyropoulos suggested a waste gate as a good way of reconciling these needs; Olds has chosen a different approach by fitting a system for injecting a cooling fluid (probably basically water or alcohol) in the mixture during periods of high boost for peak power. However they did it, it's an exciting thing for Olds to have done. This is surely a time of wonderful technical fruition in our industry.

CAMPAIGN FOR THE QUARTER—Griff Borgeson took a swinging crack at a pressing problem in the November, 1960 SCI in which, among other things, he advocated the adoption by the F.I.A. of the quarter-mile or half-kilometer distance for international records. Drag or sprint racing is well on its way to being an international affair, and this would serve to solidify that fact.

After his trip to Moscow (see page 25) Griff stopped off at the F.I.A. office in Paris and presented his case in more detail, gaining some headway in that manner. Just recently he received a letter from Sydney Allard that indicated a parallel desire in England. Allard is a member of the National Sprint Association, a group backing straight-line sport that has access to the CSI through the British automobile club, the RAC. Sydney himself is of course an inveterate hot-rodder, as he proves anew with the Chrysler-powered rail described in this issue. Allard's NSA favors the quarter-mile distance, for international recognition; now the only question is whether the American or British CSI representative will bring the subject up for discussion. We feel it's a very good idea.

FORMULA 366 IS HERE!—Events moved so rapidly that last month's introductory story on Formula 366 turned out to be a pretty fair description of a Formula that's now ready to roll! As Herb *(Continued overleaf)*

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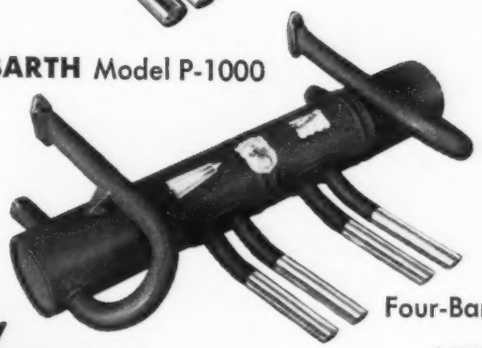

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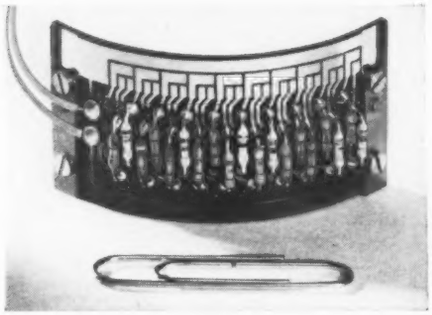

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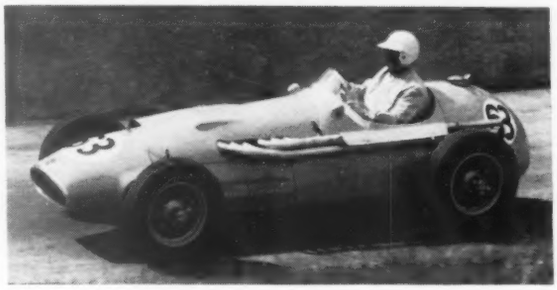
Williamson relates in his column this month, USAC has tentatively settled on a virtually identical Formula for pro road racing, with the addition of sports cars to get the show on the road. The only difference is in a limit of five instead of six liters for stock-based engines; it's now my personal understanding that this limit will probably be raised to five and a half liters to accommodate the new 327-cube Chevy V8, and as a USAC spokesman said, "While we're at it we might as well go to six."

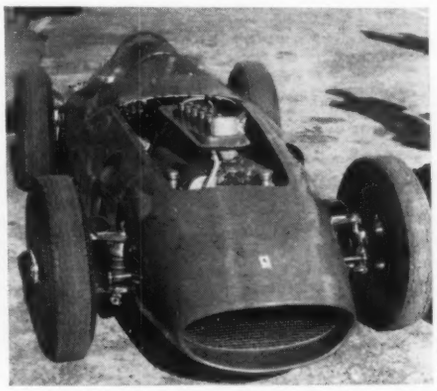


HARDY

Rivers Fletcher's Jaguar-engined HWM suits 366.

Added support for the idea of a higher stock engine limit came from England, where a proposal for an *unlimited* stock-engine Formula (two-liter minimum, to keep the Juniors out) was activated by the British Racing Drivers' Club and kept very alive by the British Racing and Sports Car Club. Car builder Brian Lister and BRSCC secretary Nick Syrett have been specially pushing this "Formula Senior," and in fact had made arrangements to have it presented to the CSI at its September meeting in Milan. The American representative at this meeting was made fully cognizant of the American opinion regarding 366—and information on this was exchanged with the British, who liked it very much—with the result that we can now say there's a fair chance of the Intercontinental Formula being amended along these lines! The name "366" wouldn't be adopted, of course; it will have served its purpose if it brings about this exciting kind of racing.

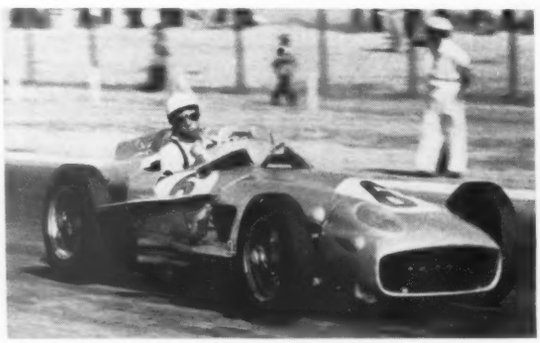
BRITISH ENTHUSIASM — Real encouragement was received from "Lofty" England of Jaguar, who ended a long discussion by saying, "I personally feel that the suggested Formula could produce some quite interesting motor cars and some very good racing." Equal interest was evinced by John Cooper and Colin Chapman; the latter was quite willing to accept a balance of three-liter racing engines against unlimited stock-based engines. Both Chapman and England suggested that modifications to the stock-blockers should be restricted along Formula Junior lines (retention of stock stroke), which we don't feel is necessary. Many builders will be making special cranks anyway so there's no need for a stroke restriction.



COLTRIN

V12-engined Dino Ferrari fits 366.

John Wyer, director and general manager of Aston Martin Lagonda Limited, said he felt, "in contra-distinction to most of your correspondents, that the Formula would be heavily in favor of the three-liter racing engine. Perhaps we in Europe have less faith in 'cubic inches' than you do, but I cannot see a car with a six-liter stock engine, with its inevitable weight penalty, getting round the Nürburgring in under nine minutes." Wyer's countryman Dean Delamont feels the Stock-blockers would be favored but adds, "irrespective of the details I am sure the general idea is a good one and hope that it can be brought to fruition." It seems, Mr. Delamont, that it can. —*KEL*



ALVAREZ

Dream 366 car is this SLR-engined W196 Mercedes.

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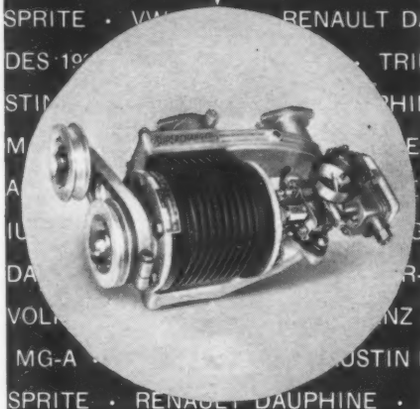

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LETTERS with Sandy Kalison

EYEWITNESS

I fear I can shed no light on the controversy raised in your photo article, "Duel in the Desert," September '61 issue. However, I may be able to add more fuel to the fire.

At the Riverside running of the U.S. Grand Prix last November, I found a point at the entrance to Turn 6 from which I was able to take some very good films, one sequence showing the very duel your photomontage presented so clearly. I also timed the cars in both the production race and the Formula One event. Besides timing full laps, I picked two points, one at the entrance and one just as the cars went out of sight, in order to see if there were any apparent differences in cornering speeds.

I found, upon checking the corner times, the fastest production car between my points of reference was the Austin 850 driven by Jim Parkinson. The fastest full lap time which I recorded for him was 2:57.1. The next fastest production car through the turn was the 3.8 liter Jaguar driven by Augie Pabst.

The most interesting part of the day, however, was the timing of the Grand Prix cars. As I was engaged in taking movies to be shared with fellow enthusiasts, I found time only to time one Grand Prix auto through the turn. That car was Stirling Moss in the Lotus, and as closely as I could discern on my stopwatch, his time was identical with that of Parkinson's 850.

Admittedly, this was only one turn, and not one of the faster ones, but it is obvious to me that Stirling did not gain the full minute which he had in hand (1:57 as compared to 2:57.1) on this turn.

At any rate, I feel compliments are due for your excellently presented Road Research Report on the Volvo P 1800. I must admit, however, I miss the presentation of acceleration figures in table form. But for this, I consider your RRR a model which could well be followed by your competitors.

Ray Beaver
Clovis, California

Mr. Beaver's comments on speeds through a given turn emphasize the point we made in "Duel in the Desert," that there's a lot more to a race than just who finishes first.

His disappointment over our not including tabulated acceleration figures (something a great number of readers have also noted) should now be banished. Starting with our Road Research Report on the MGA 1600 Mark II (November) we have included a box listing acceleration times.

CORVETTE VS. JAGUAR

I have been avidly reading your magazine for some time, but there is one subject I have never seen discussed, and that is *Corvette vs. Jaguar.*

I have seen more sports car fans lose their composure and almost come to blows over this subject than any other—and it's one that is never settled. Corvette fans love Corvettes, Jaguar fans adore their Jags, and the battle goes on. The two cars are competitive in price, to a degree. I have never seen an objective analysis of the two cars delivered by an authoritative source, so . . . would you please give us your opinion on the subject?

If you would, it would be most enlightening to compare the Jag against the Corvette from the following viewpoints: handling, durability, reliability, and top speed. I didn't include acceleration, because almost everyone is unanimous in agreeing that the Corvette is tops there (that's the only thing they agree on!).

Michael Milligan
Fort Worth, Texas

Sorry, we don't "rate" cars good-better-best-bestest the way mail order catalogs advertise items. We are "selling" no product other than factual information and, as far as possible, unbiased evaluation, but think you may find the Road Research Report on the XKE, the Road Test on the '62 Corvette and the comparison of the two cars in this issue helpful in reaching your own conclusions.

OVER, FROM DOWN UNDER

I am wondering if you can help me in my quest to learn more of the American sports car world. I have 300-400 Australian motor magazines which I wish to dispose of in exchange for old American magazines, photos, car race programs, pamphlets, etc. all dealing with motor racing. Could you possibly put me onto someone?

Graeme J. George
12 Cridge Street
Launceston, Australia

Certainly. We'll even tell them that printed matter is only 26¢ a pound over the bounding main.

SMALL WORLD

I buy your magazine whenever it is available, which is fairly regularly since the start of this year. We, my friends and I, enjoyed immensely your story on the Birdcage Maserati although we were disappointed at the lack of a performance panel. In regards to the photo at the top of page 61, I did not think Sprites could lay rubber on the road. But photos don't lie.

I just read your article on the XKE in the May edition. This is, without doubt, the best magazine I have ever read. Even the advertisements are terrific, especially the one for the 404. Only to pin the advertisement on the wall the magazine must be wrecked because of the article printed on the back. Please don't do it again.

How come the jazz about Australian circuits is in the "European Newsletter"? It was a very good "little" article; how about more in the future?

Thanks for a really first-class publication and please keep up the high standard.

P. Flish
Kogarah, N.S.W.
Australia

"I HAD NO IDEA DART 440 WOULD ACCELERATE LIKE THIS. IT'S AN AMAZING MACHINE!"

That was Buck Baker talking. He had just taken his first drive in a 1962 Dodge Dart 440. The place was Utica Proving Grounds in Michigan. The time: July 27, 1961. We asked Buck to test Dart 440 and give us his reactions.

Buck calmly stepped into the car. Started it up. (Dart 440's new, quiet high-speed starter kicks over an engine about as fast as you can snap on an electric light.) Buck tromped on it. Dart 440 dug out. Socked Buck back in his seat as it leaped off the line. Even an experienced driver like Buck Baker, twice champ on the hot NASCAR circuit, was astonished.

"I had no idea it would accelerate like that," he said.

But Buck's a goer. After a couple of orientation laps, he buried the needle. "It handled beautifully," he said. "I could drive with two fingers and an arm in the door." And that's just what he did!

FROM ZERO TO SIXTY IN 8.1 SEC. Ace dragster Don Garlits, current holder of the "1320" record, is no stranger to high speeds. But he was likewise amazed. "Quite a bomb!" he remarked.

We asked auto authority Bill Carroll to put the watch on Garlits. That particular Dart 440 was hardly geared for dragging—3.21 standard axle and 3-speed automatic with 361 cu. in. V8. A 4-door hardtop, with radio, heater and power assists, equipped for street use. Under these conditions, you can see that the test was pretty much informal. Just the same, Garlits popped from zero to sixty in 8.1 seconds—ate up the quarter mile in 15.4 seconds.

"Very good power-to-weight ratio," Garlits observed enthusiastically.

It's 11 to 1, in fact. That's because we engineered out dead weight. Left only the muscle in Dart 440. With less dead weight, there's more live action. More mpg, too. We call Dart 440 the first of the Action-Economy cars.

More guts, less gas.

"Anyone would have lots of fun in this car," Garlits said.

We think so, too. We also think you'll be seeing a new set of wheels on the poles this year, a new challenger on the lines. Dart 440. "An honest car," Bill Carroll describes it.

You've got to drive what's happened to Dodge. It's an enthusiast's kind of car all the way.

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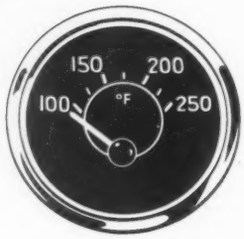

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SPORT with Herb Williamson

One story in our November issue was outdated before it reached the newsstands —and we're pleased that it was. It was our story on Formula 366, in which we urged revitalization of the existing Intercontinental Formula under easily adoptable, yet exciting, specifications.

We recommended in essence that the Formula be expanded to include production engines up to a displacement limit of 6 liters or 366 cubic inches. We defined a production engine as one of which over 1000 were built in any 12-month period and specified that the basic block, heads and valve actuation be retained with no supercharging allowed.

The ink had barely dried on the pages when we received word that USAC's reorganized Road Racing Advisory Committee had met and approved a somewhat similar split Formula. For its 1962 Championship Road Racing Circuit, it will permit racing engines with overhead cams to go to a 3-liter maximum and will permit stock-block engines to go to 5 liters in open wheeled racing cars. Sports cars up to 8 liters will be allowed in early races until the Formula "takes root." Early information said these would be firm specifications for two years, but that the Formula could be reviewed for 1964.

While this is not exactly what we hoped to see adopted, we feel heartened that one organization responsible for American racing has recognized the need for a Formula designed for this country. It's more than likely that any confusion over the regulations will sort itself out within a few races and drivers, fans and track operators will find they have a highly rewarding kind of competition. Furthermore, as Karl Ludvigsen relates in Crashbox, there is some chance that USAC will boosts its stock block limits in deference to opinion in this country and abroad.

USAC, as we reported in the November column, is seeking to take the lead as the sanctioning body for U.S. racing. This objective is fortified by its announcement on the expanded Intercontinental Formula, in which it states events will be open to "all qualified drivers, professional or amateur, foreign or native," to promote "a program of championship road racing in the U.S. equal, if not superior, to what is found in other parts of the world."

For 1962 the program calls for a National Championship Road Racing Circuit. It will include, in addition to traditional USAC events, 10 to 15 other events of about 200 miles duration, with purses of $7500 or 30 percent of the gate.

The Goodyear Tire and Rubber Company captured Mickey Thompson's phenomenal 1960 406.6 mph run at Bonneville (see SCI, Sept. '60) on 16mm color film. The 13-minute film is available free to

(Continued on page 14)

LE MANS

Call it the Tempest LeMans! (Luh-mahnz)

Pontiac's new package of punch...posh...and low price! Convertible or Coupe! A couple of fancy, frisky newcomers. Pull the trigger on a fired-up "4". (Standard power: 110, 115, 120 or 140 h.p. Optional at extra cost: 166-horse "4"; 185 h.p. aluminum V-8; four-speed, floor mounted stick shift.) Plush, sports-type bucket seats and full carpeting are part of the package. Plenty more. Front engine balanced by rear transmission. Independent suspension at all four wheels. Big 15-inch wheels and tires (at no extra cost). Get the good word from your Pontiac dealer. He's very high on the car and very low on the price. PONTIAC MOTOR DIVISION • GENERAL MOTORS CORPORATION

Drive America's only front engine/rear transmission car...it's balanced like none of the others!

Five "firsts" on the "Fourth"

Automotive engines do their

PIKES PEAK STOCK-CAR CLIMB—Swinging around one of the 152 switchback curves that makes this upward climb one of the world's toughest tests for car and driver, Louis Unser pilots his Champion-sparked Chevrolet to a record-shattering victory in the 1961 Pikes Peak Auto Hill Climb for stock cars. The old stock-car record, set in 1957, was 15:39.2 minutes. Louis Unser shaved off better than half a minute, setting a new mark of 15:06 even!

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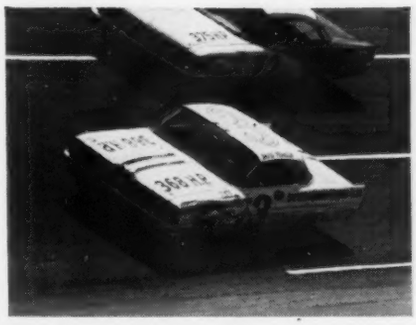
prove again...

best with Champion spark plugs!

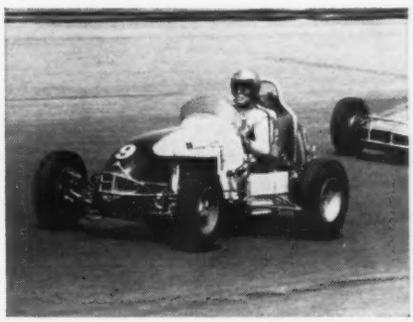
From the cold, rarefied air of snow-topped Pikes Peak to the sweltering heat of the Daytona Speedway, the Fourth of July was a big day for auto racing—and for Champion! A day that proved again something that has been proved countless times before: No matter what the engine—or how tough the driving conditions—you can always depend on top performance from silvery-plated Champions . . .

PIKES PEAK CHAMPIONSHIP CLIMB—In the fastest drive ever made up the mountain, four-time winner Bobby Unser makes it five victories as he becomes the first man ever to drive to the top in under 13 minutes! Smashing the record (13:28.5) he set last year, Unser's Champion-sparked charger whipped up the 12.42-mile course in 12:56.07 minutes! On some of the short straights he hit 120 mph!



DAYTONA "FIRECRACKER 250"—In a blistering race (154 mph) on a blistering track (126°), David Pearson slams his Champion-equipped '61 Pontiac into the lead on the all-important last lap to win his second big NASCAR Grand National race of the year. Earlier, Pearson won the Charlotte "World 600" in his Champion-sparked stocker.

INDIANAPOLIS RACEWAY PARK—Norm Nelson, 1960 USAC stock-car champion, dominated the day in his Champion-fired '61 Ford: Fastest heat, fastest qualifier, winner of the Trophy Dash—and winner of the 100-lap main event.



TRENTON, N.J.—Sharing the driving chores with Jim Davies, Bob Marshman, co-choice for 1961 "Rookie of the Year" at Indianapolis, drove the Champion-equipped Konstant Hot Special to victory in the 250-mile USAC race.

These Champion-sparked victories are but part of a long and continually growing list of performance events won by cars using always-dependable Champion spark plugs.

Why is Champion the spark plug that wins most performance events? Simply because performance experts know that—regardless of claims—no one has ever built a spark plug to outperform a Champion in an automotive engine! It's a good reason for always equipping your car with the performance spark plugs—silvery-plated Champions!

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(Continued from page 10)

bona fide sports car clubs. Contact Robert B. Masson, The Goodyear Tire and Rubber Co., Dept C/D, 50 Rockefeller Plaza, New York 20, New York.

Art Malone, driving Bob Osiecki's "Mad Dog IV, cracked the 180 mph, $10,000 challenge barrier at Daytona International Speedway August 28. Malone dusted the 2½-mile trioval in 49.57 seconds to claim the cash offered by Speedway president Bill France. The car was built in 1958 by Frank Curtis for Indianapolis and was used for Firestone tire testing under Jim Rathmann at speeds over 170 mph. For the record attempt, which eclipsed the closed track mark set by the late Tony Bettenhausen at Monza —177.038 mph.

Malone went through a get-aquainted period with the car, gradually increasing its lap speeds. On August 5 he boosted the closed track record to 177.479, then transmission trouble sidelined the car. On August 21, he attained 178.253 mph. August 23 looked like the day for the record, but car skidded on the banking for over a quarter mile almost into the straight, blowing a tire in the process. August 27 saw a further improvement in the speed but still no $10,000. Finally on August 28, he did it—181.561 mph. The Mad Dog IV was powered by a fuel-injected, supercharged 413-cubic inch Chrysler engine developing a reported 840 bhp. How about another cash prize for a new lap record, Mr. France?

COMING EVENTS

October		
20–22	Pacific Grand Prix	Laguna Seca, Calif.
21	SCCA Regional Races	Lime Rock, Conn.
	Hockley Valley Hillclimb	Ontario, Canada
22	12-hour Little Le Mans	Marlboro, Md.
28–29	SCCA Divisional Races	Dothan, Ala.
	SCCA Regional Races	Vineland, N.J.
	SCCA Regional Races	Muskogee, Okla.
	CSCC Races	Las Vegas, Nev.
29	British Columbia SCC Races	Westwood, B.C., Canada
November		
4–5	SCCA Regional Races	Savannah, Ga.
5	RAC of Mexico Pro Races	Acapulco, Mexico
11–12	SCCA Divisional Races	Marlboro, Md.
	SCCA Regional Races	Daytona, Fla.
	SCCA Regional Races	Cotati, Calif.
	SCCA Regional Drivers' School	Phoenix, Ariz.
19	Armstrong 500 Races	Phillip Island, Australia
21–26	Imported Car Show	San Francisco, Calif.
25–26	SCCA Divisional Races	Phoenix, Ariz.
	SCCA Hillclimb	Chimney Rock, N.C.
27–Dec. 2	Bahamas Speed Week (Karts)	Nassau
December		
3–10	Bahamas Speed Week (Sports Cars)	Nassau
9–10	SCCA Regional Races	Hando, Texas
17	Cape Town G.P.	South Africa
27	South African G.P.	New London
January		
20–26	Monte Carlo Rally	

N.B. Every attempt is made to ensure accuracy in this list; however readers are advised to contact tracks or officials to verify dates.

The Lotus Seven (see SCI, June, 1960) is now available in either kit or completed form using the 1340 cc Ford Classic engine. This is the big brother of the 105E Anglia engine used in the Morgan 4/4 Series III. See our Road Research Report on the Mog for comments on the engine. We've had a number of readers asking where they can buy Lotuses and would suggest two places. In the east, contact Grand Prix Motors, 32 Ames Avenue, Rutherford, New Jersey. In the west contact Western Distributors, Inc., 317 No. Victory Boulevard, Burbank, California.

The "Ferrari for the Masses" (see SCI, November, '60) has reportedly been boosted to 1000 cc and is expected to redebut at the Turin salon this fall. Also anticipated is the three-liter Lancia Flaminia.

The Dunlop Tire and Rubber Corporation, Racing Division Dept. C/D, Buffalo 5, New York, is selling yellow and black one-piece racing suits with the Dunlop pocket patch for $15.95, postpaid. Specify your size, 36 through 44.

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FINEST, FIERCEST YET...'62 CORVETTE BY CHEVROLET

Corvette has never been a car to rest on its laurels, and your first clue to the Corvette surprise for '62 is the car's clean-swept, uncluttered styling. For many people, the change of face might have sufficed, but not for Chevy engineers. They've given the Corvette a new 327-cubic-inch V8 that'll give you a belt-in-the-back like nothing you ever drove. This new standard engine, with a single four-barrel carburetor, has 250 bhp at 4400 and produces 350 pounds-feet of torque at 2800. With the 1962 Fuel Injection* engine you get a whopping 360 horsepower at 6000! This is performance to please the wildest wind-in-the-face sports car type! We could have devoted this space to a treatise on Corvette's styling and luxurious interior, but we'd be letting a great car down. . . . This new engine's the thing, and you'll know it the instant you plant your foot on that loud-pedal! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

*optional at extra cost

Test your sports car IQ!

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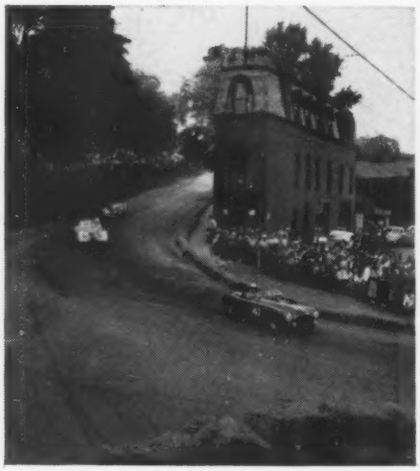
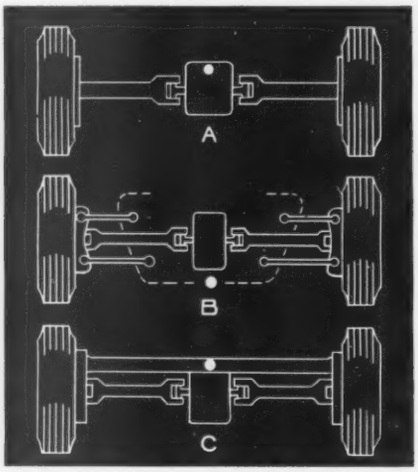


1. Can you name this pioneer American road racing course?



2. Can you name these types of independent rear wheel suspension?

3. Can you identify this car?

4. What does this symbol stand for?

THE symbol stands for the best engine life preserver you can give your car. Super-refined from 100% Pennsylvania Grade Crude, Quaker State Motor Oil protects your car's engine, keeps your car on the road and out of the repair shop. Insist on Quaker State, available most everywhere. For the name of your nearest Quaker State dealer, please call Western Union Operator 25.

Answers: 1. Milliken's Corner, Watkins Glen, N.Y. 2. (a) Swing axle, (b) Link-type, (c) De Dion. 3. 1928 Riley. 4. World's finest motor oil.

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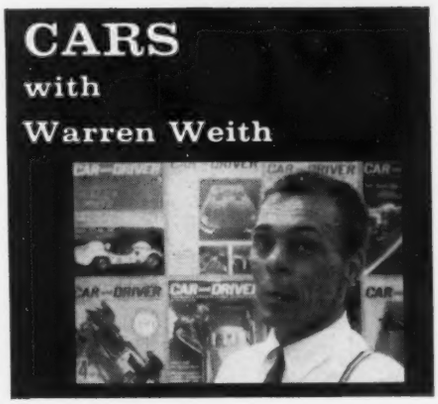
QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PENNSYLVANIA



BRISKER BRISTOL

The Bristol 406 was a limited-production automobile much admired by really clued-up Britons. They bought 406s because they admired their superlative finish, good roadholding and general air of quality. If there were objections to the car they were lodged against the engine, which was a 2.2-liter in-line six developed from the prewar BMW Type 328. While a very willing powerplant, it was beginning to show its age—25 years this year. It was asking rather much of it to propel 3000 pounds of car at modern speeds.

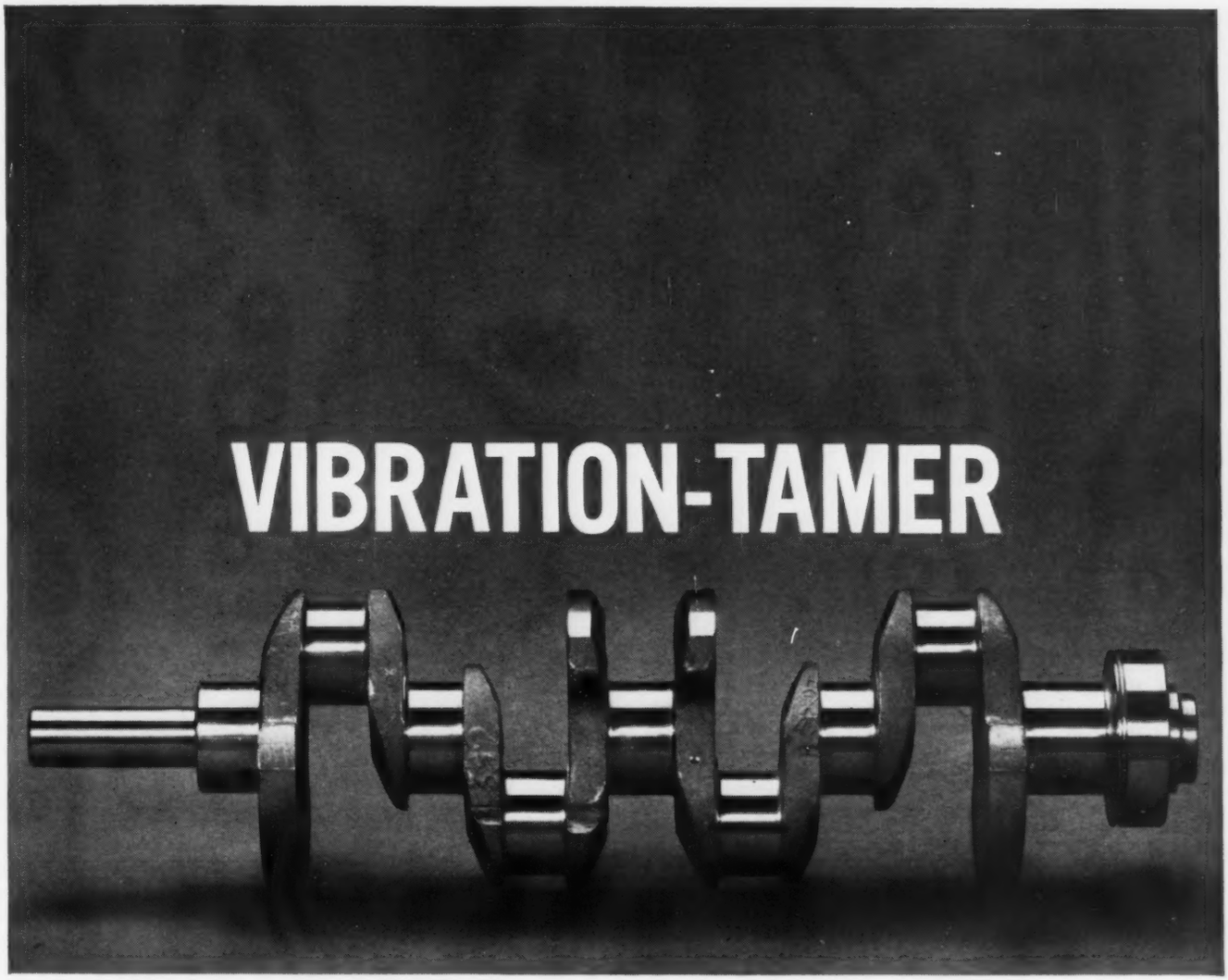
This has all been changed with the recent introduction of the 407. Externally similar to the 406, the 07 is all new—and all muscle—under the hood. The new model is powered by no less than 5.2 liters of V8 Chrysler, which drives through an automatic transmission. Contributing Editor Dennis May watched a pre-production Bristol receive its Chrysler engine at the factory in Filton. It was a remarkably easy installation that required only one chassis change—although it was a fairly major one. Use of the big engine necessitated abandonment of the time-honored transverse front leaf. Separate coils—with the addition of upper wishbone links—are now used on the front suspension. Weight distribution on the new model is now 55 percent front and 45 percent rear; with the old six it was more on the order of 50/50. Factory people claim that the front bias actually helps, rather than damages, the car's stability on the road.

The 407 scores a minor automotive first by reason of its Smiths electric impulse tachometer—the first production car to be so equipped. Unlike earlier impulse counters, the Smiths design has no connections, electrical or otherwise, with the engine. It still works on the principle of measuring the frequency of make-and-break in the distributor contact breaker, but this is done by a transistorized instrument which gets its signals from the wire between ignition switch and coil. This lead is run through an iron bridge on the back of the signaling instrument. The bridge is the primary side of a triggering transformer. The secondary side produces momentary voltage each time contact is broken. Compared with cable-driven tachometers, the impulse type has two advantages: it's quiet and accurate. The new tach will be available as bolt-on equipment early in 1962. Until then you'll just have to buy a Bristol 407 in order to get one.

HOTTER SUNBEAM

Announced in time to start fitting for next season, a competition kit for the Sunbeam Alpine offers two stages of

(Continued on page 18)



5 BEARING CRANKSHAFT: One of the Big Differences between the powerful Simca '5' and other good economy cars

The thing you're looking at (if you don't already know) is a crankshaft. No ordinary one, though. It's a five-bearing crankshaft—the kind used in sports and racing cars from Indianapolis to the Grand Prix. But never *any* low-priced car. Until Simca.

So what? Just ask a mechanic. Or take a drive in a Simca '5'. You'll notice the difference at once: A smoother ride. Minimum vibration. None of the racket that seems to come so frequently as standard equipment on other economy cars.

Another good point: **Simca's horsepower is now 30% higher.** Those five bearings tame Simca's 65 frisky horses to make this one of the toughest and longest-lasting engines in the world.

For more big differences between Simca '5' and other good economy cars, see the comparison chart below. Then see your nearest dealer and test drive Simca yourself.

SIMCA '5'

With exclusive 5-bearing crankshaft / Brought to you by Chrysler / 12 month or 12,000 mile warranty / Parts and service from coast to coast*

	SIMCA '5'	VOLKS-WAGEN	RENAULT GORDINI
HORSEPOWER	65	40	40
MAIN BEARINGS	5	3	3
EFFECTIVE BRAKE AREA	121 sq. in.	96.1 sq. in.	81.6 sq. in.
CENTRIFUGAL OIL FILTER	Yes	No	No
NUMBER OF DOORS	4	2	4
ELECTRICAL SYSTEM	12-volt	6-volt	12-volt
UNIT BODY	Yes	No	Yes
COMPRESSION RATIO	8.5:1	7:1	8:1
WEIGHT	2020	1631	1455
OVERALL LENGTH	164.9 in.	160.6 in.	156 in.

Based on reliable automotive sources, current at date of preparation.

**Your authorized Simca dealer's warranty to repair or replace parts defective in material or workmanship is for 12 months or 12,000 miles, whichever occurs first. Only tires and normal maintenance services such as replacement of spark plugs, condensers, ignition points, filters, etc., are excluded.*

(Continued from page 16)

tune. Stage I includes a high-lift camshaft, distributor with modified advance curve, colder spark plugs, special air cleaners, and a carburetor conversion kit. Stage II includes all parts needed to convert the stock Alpine clutch to a heavy-duty unit, and an engine stabilizer to reduce vibration. Cost of the first kit is $75, while the second goes for $50. Both seem good value for the money. Available separately are: a lightened flywheel, a rear-axle kit for Alpines equipped with disc wheels, oil cooler, and a brake-lining kit. Also available is a suspension kit containing heavy-duty front springs, bigger front anti-sway bar and special rear shock absorbers. All of these bits and pieces were engineered by the Rootes Competition Department from experience gained in running the cars at Le Mans, Sebring, and in SCCA competition in this country. They are all available from Rootes Parts Departments, New York or Los Angeles.

TEN TIMES BETTER

Jaguar introduced its Mark X at the London Motor Show in October. It marked the end of a long series of related designs starting with the Mark VII and running through the Mark IX. The only thing the X shares with current models is the well-known 3.8-liter six-cylinder Jaguar engine. The new sedan benefits, however, from E-Type goodies on the engine in the form of straight-port head, triple SUs and 9-to-one compression ratio. This produces 265 bhp—or 45 more horses than the old Mark IX could pump out. A top speed of 120 mph is claimed for the new sedan.

Much bigger news than use of the E-Type engine is the adoption of the two-seater's all-independent suspension for the Mark X. With disc brakes all around, and a drop in height of no less than seven inches to 56 inches, the latest Jaguar should be closer in road performance to its sporting stablemates. Thankfully the car's shape represents a complete breakaway from the bulbous Mark IX. Track and wheelbase are the same at 120 inches and 58 inches. Overall length has been increased by 5½ inches, with most of it being used to get rid of the sawed-off look of the Mark IX, and to increase trunk space. Among many well thought-out gadgets, the thermostatically-controlled air intake right under the windshield is one worthy of mention. All in all the X should prove more than equal to the job of replacing the Mark IX, which was getting a bit long in the tooth.

SHIFTLESS WEE ONES

Available on all the Farina-designed BMC sedans is the new Borg-Warner Model 35 automatic transmission. Cars to which the three-speed and torque converter device will be fitted are the Morris, Wolseley, Riley and Austin. It's reported to be no heavier than the four-speed gearboxes it will replace, due to extensive use of light alloys.

VAUXHALL PLANS

Vauxhall, whose peak year in the States was 1959 with 22,000 units sold, has completely revamped its Victor sedan and wagon for 1962. At this writing it had not been decided whether or not these new models would be used in a renewed bid for dollar business. The new Victors are bigger in every body dimension except height, which is decreased by 2½ inches. While larger, the cars are lighter by some 75 pounds. Also increased is the wheelbase which is now an even 100 inches—an expansion of two inches.

The 1508 cc rockerbox engine is basically unchanged, but improved porting and a hike in compression ratio to 8.0 to one increases power and torque a trifle. Of interest is a hotter version of the Victor called the VX-490. This little Luton hot rod has dual carbs, aluminum alloy cylinder head, and a 9.3-to-one compression ratio. All of this hotting-up results in 81 bhp and a rumored top of 90 plus. While a VX driver is trouncing mere mortals in their Victors his ego will be further assuaged by the knowledge that the decor in his car is different from that on standard models. Either one of the new Victors can be had with an optional four-speed transmission with floor shift and synchromesh on all four gears.

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- *Luxurious upholstery, trim and appointments* ■ **All popular power and automatic options, of course.**

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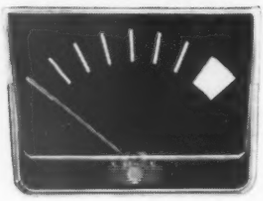
CORVAIR
VW



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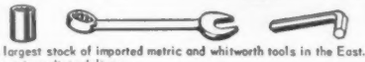

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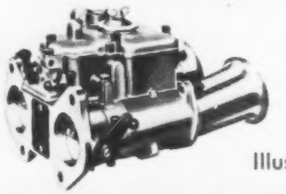

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TECHNOTES
with
Jan P. Norbye

TITANIUM IN CAR ENGINES

When I visited Modena last summer, Ferrari's publicity chief Franco Gozzi went round the factory at Maranello with me. In one of the machine shops he brought me two connecting rods, apparently identical. When picking them up, one in each hand, I soon understood that they were not. One was steel and the other was made in titanium alloy. The weight difference was about 35%.

In the aircraft industry, titanium has been a metal of considerable importance for many years, and we have heard of one-off applications in the automotive field, notably for chassis and frame parts. The 1960 Le Mans Jaguar was probably the first to experiment with titanium con-rods. Now, Ferrari uses them in the racing versions of the V12, and Porsche has ordered a batch of 75 titanium con-rods from an American supplier, ostensibly for their racing engines. It may be time to look more closely at titanium as an engineering metal.

Its specific gravity is 4.5 and it is malleable and ductile. Popular titanium alloys contain iron, silicon, manganese, aluminum and chrome, in widely varied proportions, plus carbon, nitrogen and oxygen. Apart from its lightness, the main advantage of titanium alloy is high resistance to impact, fatigue, and temperature. There is one very important disadvantage, which excludes the use of titanium for all parts engaged in rubbing motions. The metal tends not only to seize on itself but also to pick up on any other surface on which it may be rubbing. A titanium piston, consequently, is out of the question for the time being. Titanium alloy shafts are a possibility, provided they are fitted with some form of sleeve to give the journals a rubbing surface. Titanium alloy con-rods, as used by Ferrari, are naturally equipped with thin-wall bearings as a rubbing surface against wrist pins and crankshaft journals.

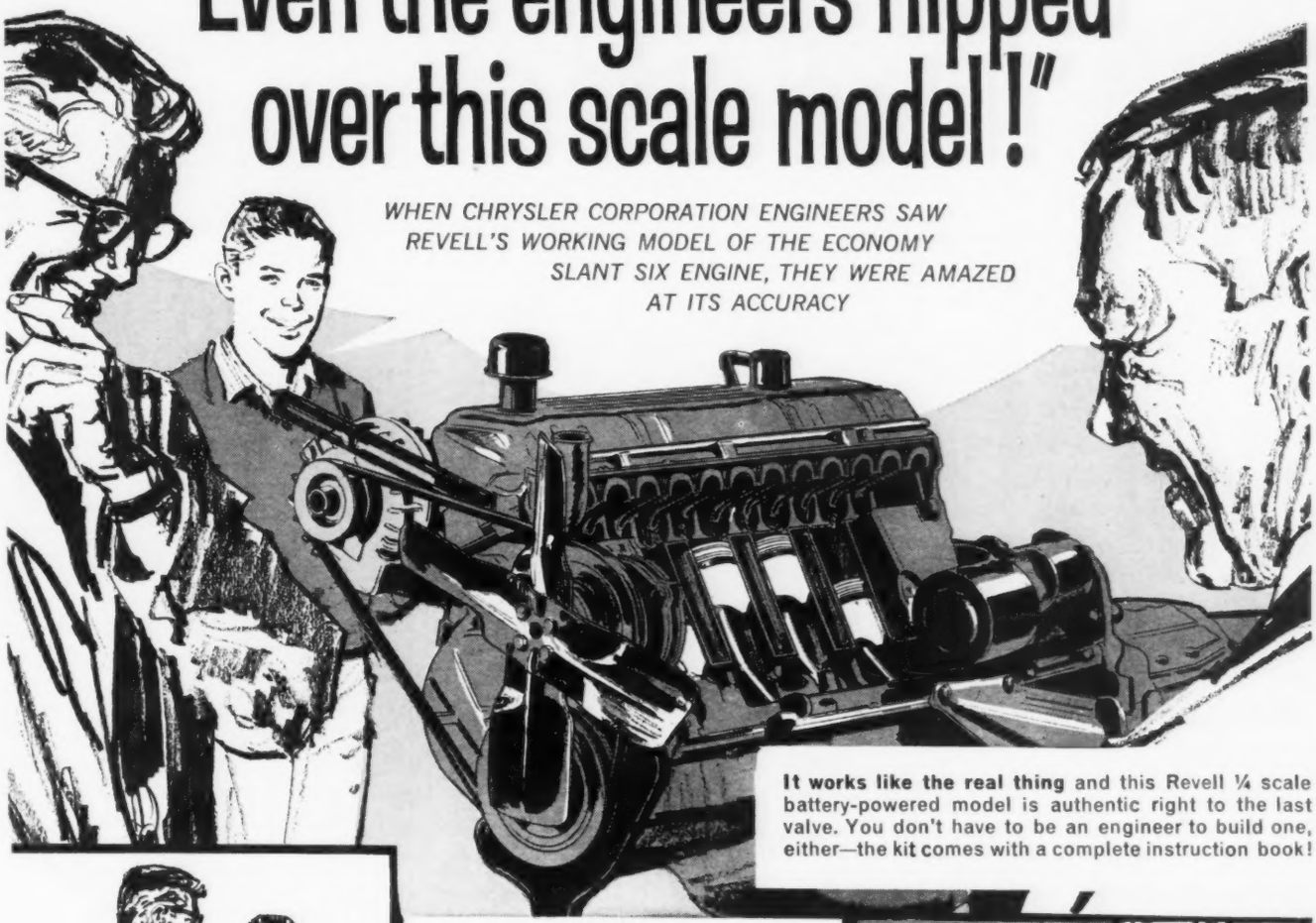
Titanium compounds are generously distributed in nature, but the metal is difficult to extract. In addition to the high initial cost of production, there are difficulties of fabrication which further increase its price. Titanium alloy cannot, at the present stage of metallurgical progress, be cast, chiefly because all metals so far tried for casting have been attacked by the molten metal. Titanium forgings can be produced at very high temperatures, but die wear is much greater than in the case of steel alloys. Machining and grinding of the metal is both difficult and costly. In short, it is improbable that titanium will find wide application in the motor industry until its importance in aviation reaches the point where increased production will bring the price down.

(Continued on page 22)

BILL WEAVER SAYS:

"Even the engineers flipped over this scale model!"

WHEN CHRYSLER CORPORATION ENGINEERS SAW REVELL'S WORKING MODEL OF THE ECONOMY SLANT SIX ENGINE, THEY WERE AMAZED AT ITS ACCURACY



It works like the real thing and this Revell ¼ scale battery-powered model is authentic right to the last valve. You don't have to be an engineer to build one, either—the kit comes with a complete instruction book!

"We designed the real one on a 30° slant," one engineer told Bill. "It made room for a bigger, easier-breathing manifold, so each cylinder runs at top efficiency. That's why this six gives 20% more go on 15% less gas than any we've had before. And it's amazing how Revell has matched every detail of this new engine in their ¼ scale model!"

"You can tear it down—rebuild it—overhaul it," said another engineer. "This model has everything—cooling system, carburetor, pistons, air cleaner—over 300 parts. Every one is molded in authentic colors: red, gray, silver and black."

"The breakaway front is great, lets you watch pistons working, crankshaft turning, spark plugs lighting up—the whole works. I can see how building this model would be fun for anyone—including an engineer!"

Build your own working model Slant Six! Look for this display at your nearby store!

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(Continued from page 20)

UNLEASHING THE VW

I have just calculated the mph per 1000 rpm for the four gears on my VW. I find that for the red-line speed for first, second and third gear and the quoted speed of 68 mph for fourth gear, the engine is only turning up 3220-3470 rpm. The rated peak bhp is at 3700 rpm. Are my calculations incorrect or is this the result of the VW "understress" policy? I figure you have to go 91 mph in fourth gear to reach 3700 rpm and you just cannot find that kind of a hill anywhere.

Would engine balancing be required to raise the red-line speeds to 20, 40 and 60 mph and if so, how extensive a job is needed and roughly what would it cost?

Richard E. Reeder
Syracuse, New York

Your calculations are incorrect. In top gear, the VW does 18.6 mph per 1000 rpm, which means that the engine is turning 3700 rpm at 68 mph. Without modifications, your VW should reach 72 mph in top (3870 rpm) and in the gears, 22, 40 and 63 mph. For higher rpm, if you still feel you need it, we would suggest the Express bolt-on kit with two carburetors, which is intended to improve acceleration rather than top speed. For full details, write to Autotechnik KG, HANNOVER, Sodenstrasse 10, Germany. Other VW conversions including stroker kits or superchargers are available from European Motor Products, Inc., Box 668, Riverside, California; Weber Tool Co., 2290 Ramona Blvd., Los Angeles 33, California, and Judson Research and Mfg. Co., Conshohocken, Pennsylvania.

OUT OF THE PAST

I'm digging out a mistake that never could be too old to be discussed.

A good and popular magazine like yours should not publish articles like the one on pages 56 and 57 of the September 1960 SCI.

The entire story ("Simplicity Scores at Indy") is written in the spirit of its last paragraph: "Indy 1960 again has proved a principle which is older than the automobile itself: the best design is the simplest design. And you don't have to play around with machinery that only turns left to find that out."

There is no worse enemy of progress than such an ideology that would have sentenced to the garbage can such designs as disc brakes, ram induction, desmodromics, independent suspension, etc., without giving them a single chance.

Instead let us be realistic about this: invention is a most important thing but a complex design is only better than a simple one if it *is* better.

E. O. Apt
Vancouver, British Columbia
Canada

Your basic point is well taken. Sir Harry Ricardo once said, "It is far better to use 500 parts if need be, to comply with the laws of sound mechanics, than to defy them with a single part." It's as true in racing, generally, as it is in passenger car design.

Indy is a special circumstance, though —and so is much of racing. American cars are generally maintained by a single man with an assistant and owned by an enthusiast whose pocket is not bottomless. Most Indy car owners prefer simple, easily maintained machinery that can be kept in the running weekend after weekend and are loath to go too far out on a limb with anything remotely experimental.

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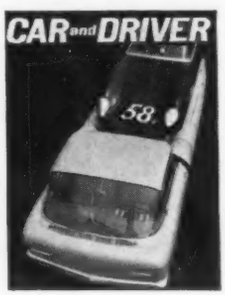

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Ferry Porsche . . . present head of the Porsche factory in Stuttgart

A great sports car isn't built overnight. It is developed and refined through years of continuous designing, research, testing and competition. Such a sports car is today's Porsche. A car held in esteem by motoring connoisseurs the world over. A car who's performance has been proven through countless victories in the world's ruggedest races and rallies from LeMans to Sebring. A car who's technical advancements continue year after year—in a continuing search for even greater perfection.

A legendary engineering genius

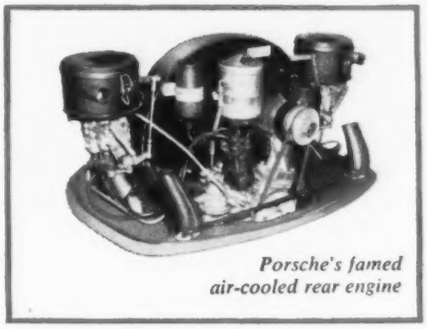
Behind this aim stands the inventive history of two men . . . the late Professor Dr. Ferdinand Porsche . . . and his son, Ferry Porsche, the present head of the Porsche factory at Stuttgart.

Professor Porsche's engineering skill is a legendary story—from the moment he startled the automotive world with the revolutionary concept of his air-cooled, four-cylinder, valve-in-head engine back in 1912—to his "Dream and Do" development of a small, compact and economical "people's car" . . . which was the prototype of today's Volkswagen.

Milestones in automotive history

And, Dr. Porsche's pioneering work on racing cars are milestones in European automotive history, too. His 500 hp, rear-engined giants of the thirties broke a whole string of world records when they first appeared. By 1937 these cars had amassed 37 wins in 55 tries, and held 15 world and 23 class records.

In the late 1940's Professor Porsche and his son worked together developing the design for the Porsche 356—forerunner of today's Porsches. The first 50 of these cars were handmade with aerodynamically-designed aluminum bodies—and created a sensation in automotive circles.



Porsche's famed air-cooled rear engine

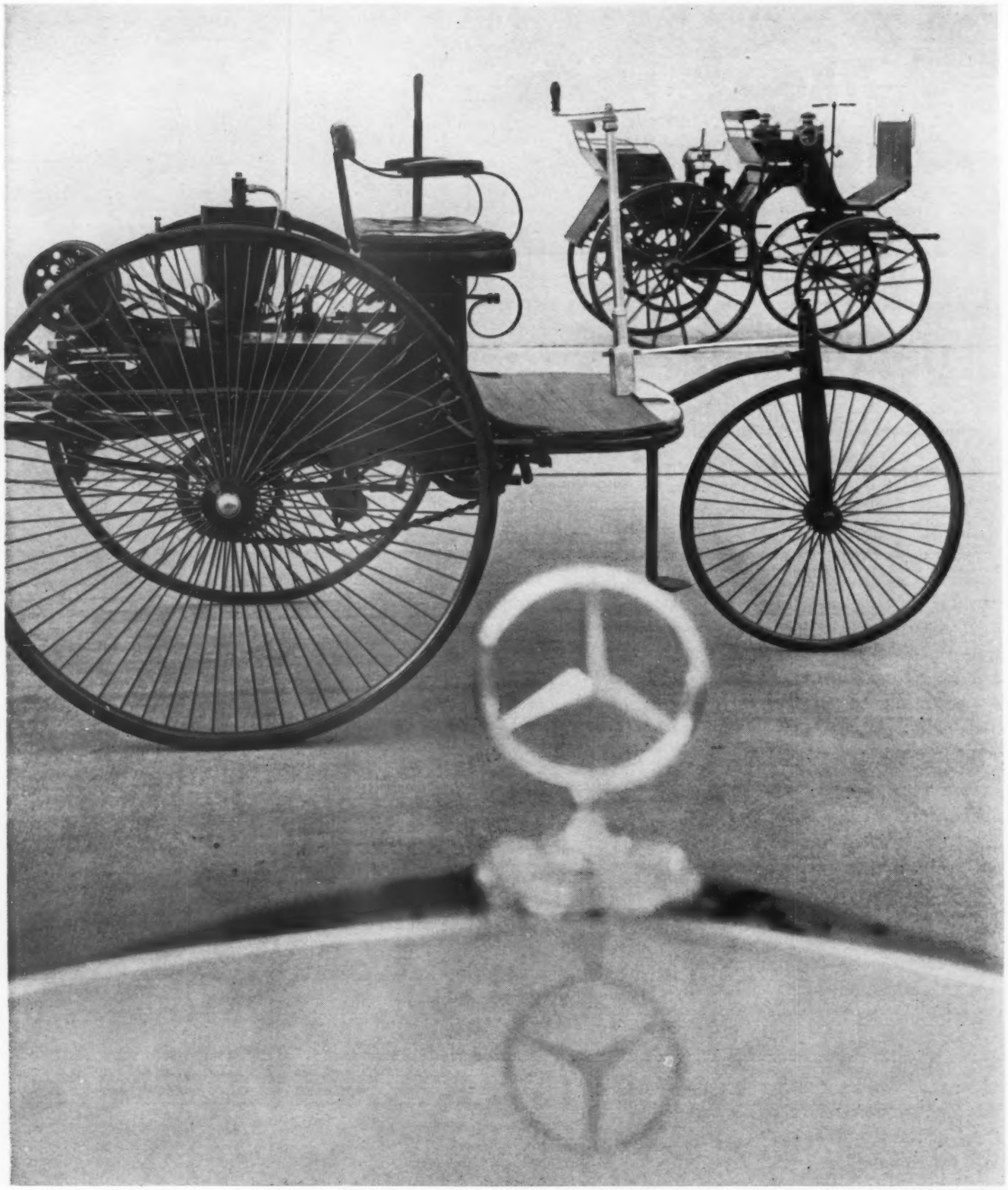
Over half-a-century later

Porsches are still creating excitement today—with their compact design—competition-proven air-cooled rear engines—fully-synchronized servo-mesh transmission—torsion-bar suspension and double-size brakes. All these features, and more, are characteristics of Porsche's development—a search for perfection that started over half-a-century ago. You'll find Porsches available in four models—coupe—hardtop—cabriolet—and roadster. Three engine versions, too. For further information, prices, etc. see your local Porsche Dealer . . . or write PORSCHE OF AMERICA CORPORATION, 527 Madison Avenue, New York 22, New York.

Craftmanship is the basis of Porsche quality

all it shares with other cars is the road.

PORSCHE



Both the Daimler 4-wheeler and the Benz 3-wheeler had one cylinder engines and a top speed of about 10 miles per hour

Genesis

This is the first page in the first book of the automobile. These two cars were the first gasoline-engine vehicles in the world to run. The year was 1886. The car in the background was built by Gottlieb Daimler, the other, by Karl Benz. This combination became Daimler-Benz, manufacturer of Mercedes-Benz cars. All other cars in the world followed these two. Every Mercedes-Benz traces its lineage directly to these ancestors. And that is how a star was born. The silver, three-pointed star is a hallmark of 75 years of ever-progressing excellence by the oldest, most experienced automobile manufacturer in the world.

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BORGESON IN MOSCOW

C/D's ambassador of speed, Griff Borgeson, tells of his efforts to interest the Soviets in international automotive events.

• Early this year Mickey Thompson conceived the idea of taking his World's-Record-holding *Challenger I* and *Assault I* to Soviet Russia to exhibit them before the citizenry. His motives were:

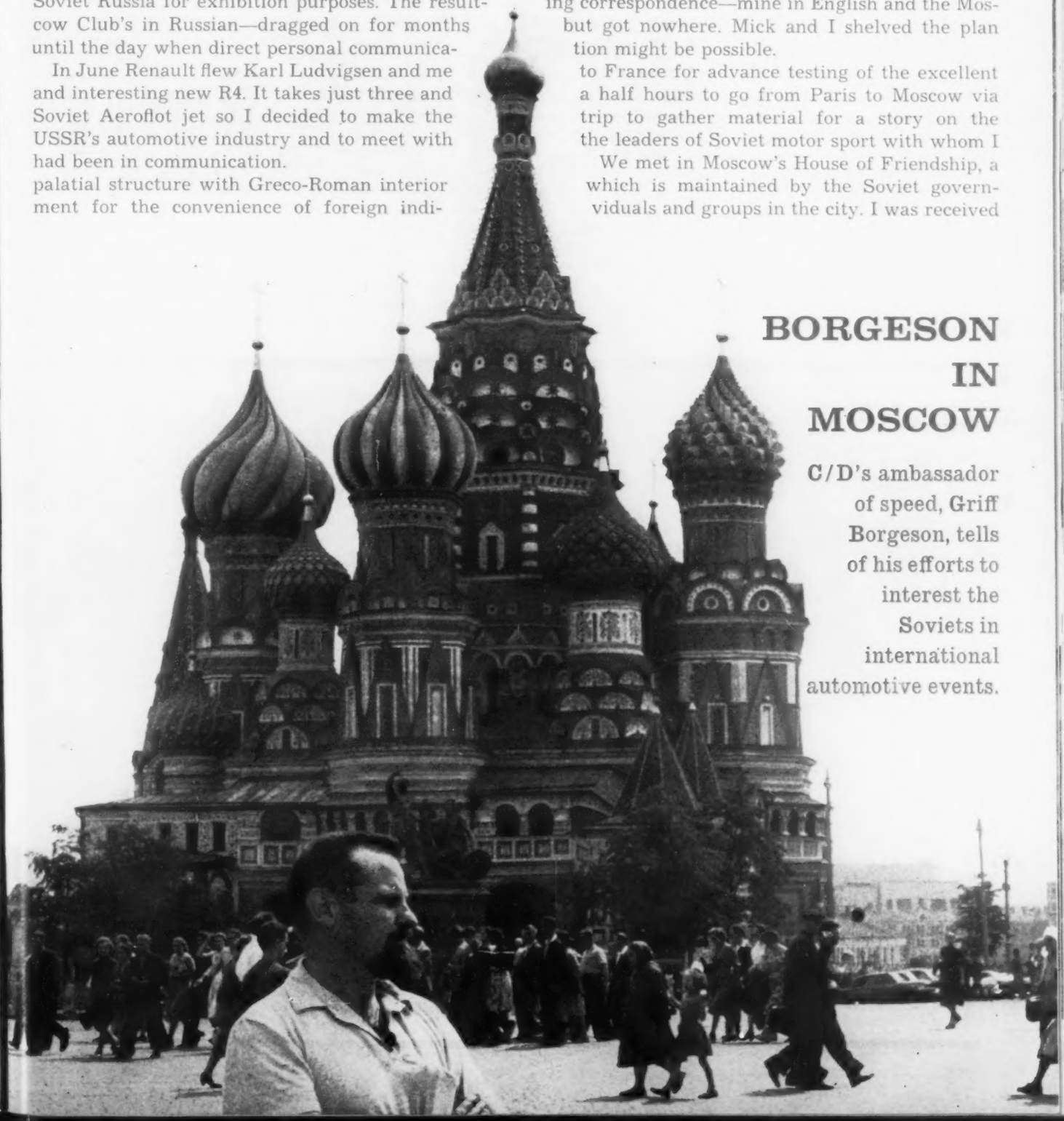
1. To give members of the world's other major power a look at the world's fastest and quickest cars;
2. To show them physical evidence of what a working-class citizen can achieve under capitalism;
3. To show them how Americans modify production car components to yield such levels of performance;
4. And to make his own contribution to narrowing the gulf that separates East and West.

Mickey asked me to supervise the project and I agreed to do my best. I contacted our State Department to make sure that the proposal was not in conflict with any official policy. Washington told me, "It's a good idea. But you're pioneering in a brand new area and we can offer no useful suggestions."

I then wrote to the FIA-affiliated Central Auto-Moto Club of the USSR, stating Thompson's proposal and requesting the Club's assistance in obtaining official permission to bring the record machines to Soviet Russia for exhibition purposes. The resulting correspondence—mine in English and the Moscow Club's in Russian—dragged on for months but got nowhere. Mick and I shelved the plan until the day when direct personal communication might be possible.

In June Renault flew Karl Ludvigsen and me to France for advance testing of the excellent and interesting new R4. It takes just three and a half hours to go from Paris to Moscow via Soviet Aeroflot jet so I decided to make the trip to gather material for a story on the USSR's automotive industry and to meet with the leaders of Soviet motor sport with whom I had been in communication.

We met in Moscow's House of Friendship, a palatial structure with Greco-Roman interior which is maintained by the Soviet government for the convenience of foreign individuals and groups in the city. I was received



with courtesy and honor in a spacious salon by the Club's vice president, Boris Tram, and three members of his staff. I was told that I was the first representative of American motor sport ever to contact the Club in person and over fresh fruit, *papiros* cigarets and Georgian wine we began to discuss racing in our respective worlds.

I submitted various letters of introduction, the most weighty of which was from FIA headquarters in Paris. Then, on behalf of the directors of the Bonneville National Speed Trials, I extended a formal invitation to Soviet contestants to participate in future installations of that annual event. This had occurred to us of the Nationals because the Soviets have become interested enough in straightaway speed to have become a factor in the FIA International Record scene:

Class	Distance	Driver	New Record	Old Record
J	1 km f.s.	Eduard Lorent	140.2 mph	120.4 (Gardner)
J	5 km f.s.	Eduard Lorent	136.7 mph	117.5 (Gardner)
K	1 km f.s.	A. Ambrosenkov	113.5 mph	N.A.
K	5 km f.s.	Eduard Lorent	120.2 mph	N.A.
K	1 km s.s.	A. Ambrosenkov	59.5 mph	N.A.

Tram was appreciative of the invitation, asked for a detailed description of the Salt, the nature of the speed events held there and their economic aspects. He then pointed out the difficulties that Soviet record-seekers have had in finding suitable courses to run on. Two years ago a dry lake similar to our El Mirage was found in the Karakum Desert but experience proved the limitations of a dried-clay surface. Then attention was turned to the area around Baskunchak Salt Lake which, like Utah's Great Salt Lake, is in the process of drying up. Here 10.5 miles of useable rock-hard straightaway were found, black guide lines were laid and Lorent christened the west-Russian Bonneville with his new FIA records. Climatic conditions are similar to those at Bonneville, with July and August as the dry, best months. Much more will be heard from this new site.

Tram hastened to match my American invitation with one of his own. He inquired about American interest in rally driving, was pleased to hear that it is extensive and reported that this form of production car competition is immensely popular throughout the Soviet sphere. The major annual rally is the *Mir y Drushba*—The Peace and Friendship Rally—organized by the Hungarian Automobile Club. This event covers 5000 kilometers and the 1961 installment had just concluded. The 1962 rally will start at Budapest, end in Prague, pass through Lvov, Minsk, Warsaw and, possibly, Moscow. Fifteen supplementary contests are included in the overall event which will take place during the first ten days of September. Tram said that US participation in this and other USSR rallies would be welcomed gratefully and would be sure to create great public interest. Detailed regulations of the 5000 km rally will be sent to C/D as soon as published. No money prizes are paid but the organizers are very generous with trophies.

Since the subject of American visitors had come up I asked, "What is your feeling about Thompson bringing *Challenger I* here?" Tram replied, "Thompson deserves great credit for his achievements with that machine but it holds little interest for us. Thompson took great risks with his life to do something that, as far as we can see, is without any real practical application. Gagarin's feat was not without its risks but it will lead to man's penetration of the solar system. We

RUSSIAN RALLYING IN 1910

• If international Soviet rallying comes off, Russia will be brushing up on an exercise she pioneered in Europe just half a century ago. The St. Petersburg-Moscow-St. Petersburg reliability trial of 1910 was the second event in an annual series; so, the Monte Carlo pilgrimage having started in 1911, the Russians were in the rally business two years ahead of the Monegasques.

It's true these early Russian trials didn't bisect any frontiers, so in one sense they weren't international; but by 1910 the field included crews from Britain, France and Italy. This gave the contest quite a cosmopolitan flavor.

The first leg, from St. Petersburg to Moscow, via Pokov, Vitebak, Minsk, Kiev, Kharkov, Kursk and Tula, was indecisive. Several cars of assorted nationalities reached Moscow with only minor penalties, posing the problem of how to establish a clear-cut order of merit on the second stage.

According to plan, the trial made a one-week stopover in Moscow, during which the cars were put on public exhibition and the organizers bludgeoned their brains for something effective in the way of an eliminator.

Well, they found one. From here on, crews were told, they could either stick to the scheduled itinerary and timetable (involving several daily stages and a leisurely speed average, like the first leg), or try to make St. Petersburg in one day by the most direct route. The straight inter-city distance was a bit over 400 miles, and nobody had ever attempted it in a day before.

This proposition, sweetened by the offer of a special prize for any crew that made it within the time limit, drew exactly one taker—Wilbur Gunn. Gunn, the reformed opera singer from Lagonda, Ohio who had founded the *marque* Lagonda at Staines, England, was the entrant of the only Lagonda in the trial.

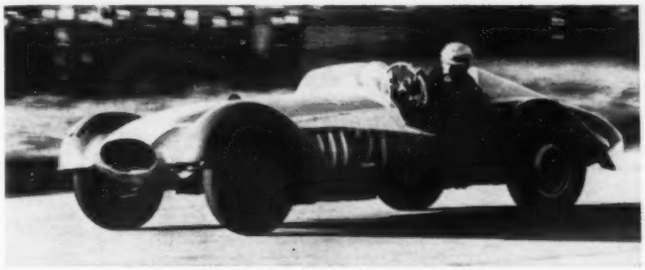
Wilbur Gunn wanted to go home, so did 400 miles of 1910 Russian highway in one day.

He had two reasons for making the choice he did: one, he had implicit faith in his product, and welcomed an opportunity for demonstrating its superiority over the competition; two, he was getting sick of Russia and, most unaccountably, homesick for Staines. Anything that might shorten his stay in northern latitudes was fine with Wilbur.

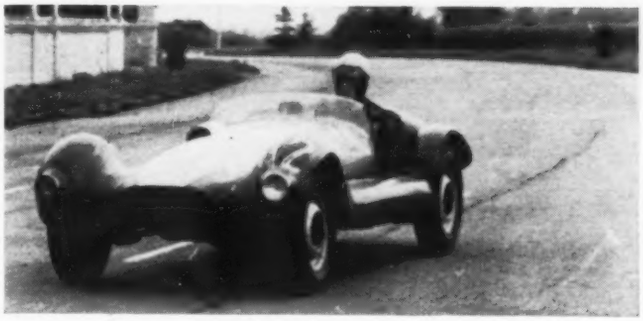
With four persons aboard—Gunn himself, his factory manager, the Lagonda sales representative for the farflung Romanoff domains, and an observer appointed by the Russian government—the Lagonda reached St. Petersburg in fifteen hours. This performance satisfied the conditions of the contest and made Wilbur's Gunn metal the outright winner of the trial. Divesting himself of the sword and spurs that protocol prescribed —he was a cavalry officer in professional life—the observer hurried straight to Lagonda's St. Petersburg dealership and ordered himself a replica of the victorious 16/80; which, incidentally, was a perfectly standard car, apart from having Russian instead of British tires. And when Czar Nicholas II heard the tidings, he presented the Lagonda company with a special commemorative certificate. Until fairly recent times this document hung in an office at the Lag factory.

The impression made on the general citizenry of St. Petersburg was terrific, and Gunn, the hero of the occasion, was lauded as befitted the capitalist equivalent of a Merited Master of Sports.

At least one member of the successful crew, G. H. Hammond, Gunn's factory manager, is still living or was, as recently as 1956. Hammond confided some reco-



This special has been continually modified over several years until it now resembles a sports car despite its Pobieda origin.



just wouldn't be interested."

Tram elaborated on the subject of safety in motor racing. "With us," he said, "the life of the driver is all-important. We go to the greatest lengths to eliminate the element of danger from motoring competition. In our rallies, for example, no driving is permitted in the rain. Our safety regulations are much more strict than those of FIA. Competition driving is organized on the basis of sharply defined levels of experience and all drivers must pass thorough physical examinations."

I pointed out that it can be dangerous to get out of bed in the morning and that fatal accidents can occur in the mildest forms of racing, quoting the old adage that you can't make an omelet without breaking a few eggs. But Tram was emphatic: "We have *no* deaths and danger is impossible in our racing."

At the present time automotive sport in the USSR consists of rallies, rare straightaway record attempts and abundant closed-circuit road racing. Contenders in this last category are two-place sports cars with full road equipment and, in separate events, Formula-type one-man cars with open wheels. Both types of machine are based on production-car components and displacement classes are 500, 1100, 1600, 2000, 2200 and 2500 cc. The cash-less character of Soviet racing probably surpasses that of our most hidebound "amateur" organizations, and the structure of Soviet motor sport parallels strikingly our own hot rod sport. Local motor racing clubs, which exist by the thousands, are the foundation of the Soviet sport. Competition cars usually are built by their drivers in the shop of their local club. The club often or frequently supports the car builder from its cash fund which is derived from membership fees and from admission fees from events which the club sponsors in whole or in part. Lorent, the FIA record holder, has one car and several engines; some drivers have as many as four cars. The Soviet government affirms its belief in the value of motor racing to the technological advancement of the culture by exempting both clubs and competition drivers from taxation.

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lections of the 1910 St. Petersburg-Moscow-St. Petersburg trial to a writer for THE LAGONDA magazine three years ago. This memoir emphasized the underdeveloped state of Russia's communications in the century's first decade. The main Moscow-St. Petersburg highway, for instance, was so overgrown with grass that Gunn and partners had constant difficulty making out where the road ended and the shoulders began. Cruising at speeds up to 50, they had to concentrate hard to distinguish between the thin grass sprouting from the brick pavement and the slightly thinner crop on either flank.

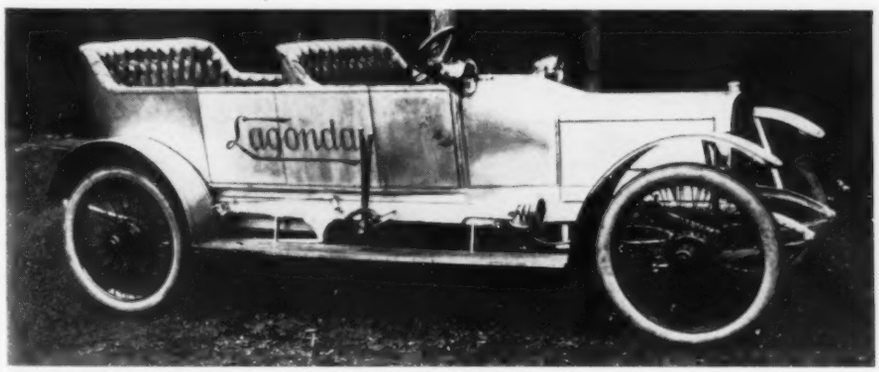
On this decisive Moscow-St. Petersburg run, the Lagonda came through unscathed mechanically. Outbound for Moscow, on the other hand, it had been temporarily crippled in circumstances strongly redolent of sabotage. A vital nut in the steering gear, which all members of the crew remembered seeing securely split-pinned before the start, quietly dropped off en route. In the resulting prang the front axle was badly bent. Hammond dismantled it, hiked across country to the nearest smithy, straightened it on the anvil and stuck it back on.

For the most part the weather was mild, which was lucky for Gunn and fellow travelers because their Lagonda had no top, sidescreens or windshield. Briefly, however, three days out on the first leg, it rained with such ferocity that all occupants were over their ankles in water. The cars of the period had finger holes in their floorboards as an aid to service operations, but drainage through these holes couldn't keep pace with the aquatic input. Making up for deficiencies in the Lag's weatherproofing equipment, all passengers wore voluminous rubber ponchos, so maybe the observer's sword, spurs and full-dress uniform didn't suffer as badly as they might from rust and tarnish.

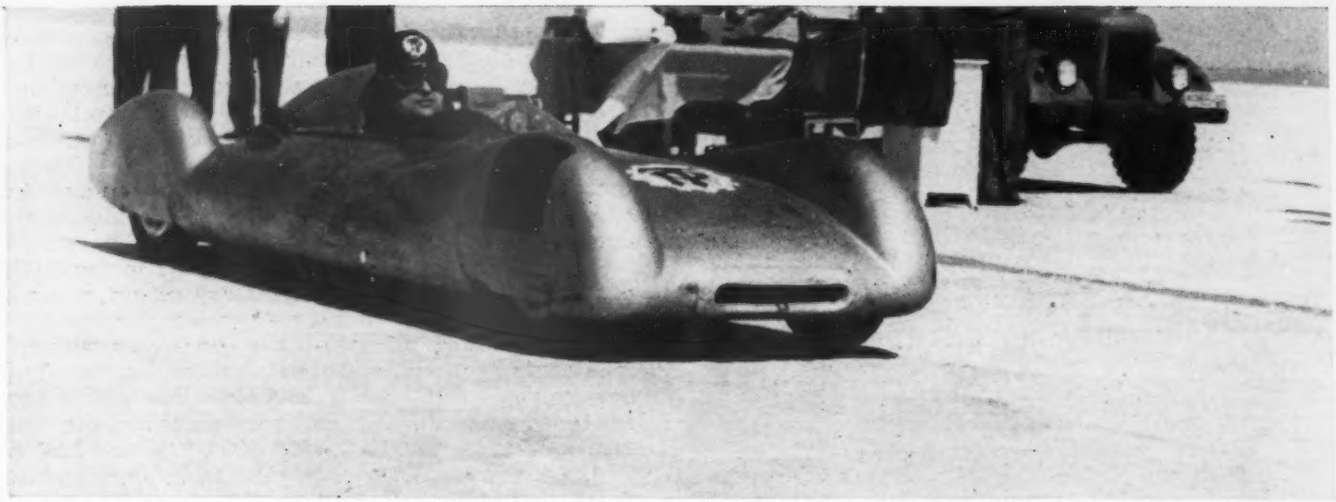
Perhaps the worst hazard, as Mr. Hammond recalled it, was from the shower of edibles rained on them from the sidelines by impressionable natives of the villages and townships the trial traversed. Soft fruits, landing haphazardly in the tonneau, were welcome offerings, but when it came to four-foot branches laden with hard green plums, the thing began getting out of hand.

The organization *per se*, though, was of a very high standard. The mobile observers, one to every car, were scrupulous in enforcing the exacting speed schedules; and by way of insurance against competitors ingratiating themselves unduly with an individual observer, a new one was assigned to every car after each night stop. The whole itinerary, 3000 versts in length (one verst equals 3,500 feet), was planned to follow the route of a main inter-town railroad; and a special train, rigged with full hotel amenities including luxurious sleeping quarters, restaurant and laundry facilities, was harnessed to the trial, reaching overnight stops ahead of the roadborne cavalcade and welcoming it with open doors.

Le Rallye, Romanoff style, surely mixed the smooth with the rough. Interesting to see how its latterday counterpart compares. —*Dennis May*



The Lagonda excursion to Russia in 1910 is an interesting and little-known prelude to the famous victories at Le Mans by W. O. Bentley-designed Lagonda cars in the 1930s.



Eduard Lorent takes off in the record-breaking Kharkov L 350 on Russia's answer to Bonneville deep in the Karakum Desert.

During this long afternoon session in Moscow I was interviewee as much as interviewer. In all my contacts with the Soviet people I found them to be intensely interested in facts about life in the USA; this also held true for the Central Auto-Moto Club. Mr. Tram asked pointed and perceptive questions about the various manifestations of motor sport in our country . . . questions which showed more than a little familiarity with the subject.

The one aspect of American motor sport that gripped his acute attention was drag racing. He knew that it consists of acceleration trials by machines designed around modified production-car components. I pointed out the appropriateness of this sport to a technology-oriented society; its immense national following; its spread to other countries; its immense value as a means of teaching and developing technological skills through a recreational activity.

He grasped all this immediately and began putting questions to me that cut to the heart of this sport's economic basis:

"Who finances these machines and drivers?"

"In the majority of cases, the individuals themselves, out of enthusiasm."

"Who finances the events?"

"Some strips are privately owned, most are club owned, in which case proceeds go to the club."

"What starting money is paid?"

"Usually none. Some promoters of events, in order to provide an outstanding attraction, will put up maybe two thousand dollars to attract outstanding entries which, in turn, will attract outstanding crowds. The biggest event of the year is the national championship meet held by the National Hot Rod Association . . . a non-profit organization. This event takes several days, will have 500 or so entries, draw around 100,000 spectators. No cash prizes are given but there are other valuable awards for the top contestants, such as a new truck, a fine set of tools."

In this form of automotive sport Tram saw something that could be applied to good purpose in the USSR: the basically amateur structure; the ease of setting up courses; the use of production-car components; its value as a training medium. He asked that I send him rules, regulations, films and other data pertinent to how to go drag racing. But before doing this he asked, "And how does all this relate to the FIA?"

It is clear that the Soviets are concerned with getting, in addition to all possible domestic mileage from their native motor sport, all they can in terms of potential international recognition. I pointed out to Tram how Cal Rice, Ed Cortopassi and Mickey Thompson had worked their way up through the drag-racing ranks until they had demonstrated their readiness to attack FIA International Records, had done so and had succeeded. Tram's office had the FIA reports on these hot-rod successes and it was unnecessary to say more.

At this point I asked Tram for his feelings about Thompson bringing his World's-Record-holding acceleration machine to the USSR. "Let us look over the material you send us," he said. "If we should decide to go forward with the drag racing sport then, very possibly, we would be very glad to see examples of how Americans construct these machines."

On this note closed the fi st meeting between Soviet and American motor-sport spokesmen. The areas of mutual interest had been rallies for production cars and sprint competitions based on production-car components. In the first of these East-West participation (and communication) was invited. In the second, communication (with possible future participation) was invited. In both cases the permeability of the Iron Curtain was shown, on a less-than-top-drawer level.

On my way back from Moscow I stopped off in Paris for a final meeting with the FIA. Long ago in SCI I had urged FIA recognition of a record distance appropriate to drag racing . . . either the standing-start quarter mile or half kilometer. As a result of this meeting such a record distance may be recognized, with due attention being given to the needs of acceleration-racers in the USA, Canada, Mexico, Australia, England, elsewhere and, perhaps before long, in the USSR.

The insularity of the USSR includes automotive matters. I had a conversation with a group of sharp young Soviet citizens. After we had discussed the talents of Elvis Presley and Charley Parker (whose recordings they had) they asked if I had an automobile.

"I'm fortunate," I said. "I have a Ford panel truck and an Arnolt Bristol two-seater."

"What's an Arnolt Bristol?"

"Well, it's sort of a poor man's Ferrari."

"What's a Ferrari?"

I also interviewed the government agency Avtoexport, on the subject of the Soviet automobile industry. A report on that will follow in a few months. Avtoexport subscribes to CAR AND DRIVER. When I asked if they would like to receive other automotive periodicals from the West they said, "Thank you, but C/D really seems to give us the comprehensive cross-section that we need." —*GB*

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POWER:

Both cars develop peak torque at 4000 rpm, the Jaguar 260 pound-feet and the Corvette 352. For peak power the Corvette revs higher, to 6000 instead of 5500, and also records a higher corrected piston speed. The Jaguar develops only slightly more power per cubic inch: 1.15 against 1.10 for the Corvette. Surprisingly the curb weight of the Jaguar is only 235 pounds less than the Corvette, so it's at a definite disadvantage in power-to-weight terms: 10.6 pounds per horsepower against the Corvette's 8.5.

PERFORMANCE:

The Jaguar overcomes its power-to-weight handicap with an excellent rear suspension (effective at lower speeds) and fine aerodynamics (effective at higher speeds), thus records acceleration times better than the Corvette to 40 mph but inferior above that speed. Reaching the quarter a half-second after the Corvette's 15-flat, the Jaguar would lose a showroom-stock drag race. We drove the Jaguar at 145 mph but were not able to test the Corvette's top speed. The latter will probably do 140 as we drove it and 145 with better gearing; the Jaguar can be expected to reach nearer 150 mph.

HANDLING:

In the Steering Behavior test (referring to the December, 1960 Corvette RRR) the two cars showed approximately the same understeer to 40 mph (taking into account differences in steering ratios), but at 50 mph the Corvette showed a strong, progressive understeer increase while the Jaguar showed only a mild, nearer-neutral increase. We feel the Jaguar's peak speed of 55 mph against the Corvette's 50 is attributable more to the tires used than to the cars. The Corvette needs 3¾ turns from lock to lock against the Jaguar's 2¾, but compensates in part by having a slightly tighter turning circle.

LIVABILITY:

Though it began life with an almost impossible interior arrangement, the Corvette has been developed so as to be rated definitely more comfortable than the Jaguar. On the other hand the Jaguar now—at the beginning—has a better relation of steering wheel, seat and dash that augurs well for future improvement. Both cars are deficient in useful interior storage space; the Corvette does offer more trunk space than the Jaguar. Under most conditions the Jaguar's modern suspension provides a smoother, more comfortable ride than the Corvette. The Corvette is superior in weather protection and defrosting but neither car has satisfactory ventilation.

Jaguar XK-E vs. 1962 Corvette

In pictures, words and data C/D compares the best sports cars of England and America. Our Road Test impressions are reviewed at left; ten pages later you learn who won the first race-track encounter.

Road Research Report:

Jaguar XK-E

• To the British motor industry, the name of Jaguar spells success: success on the most famous racing circuits in the world, and commercial success on every market where the make has been offered. What is the secret of this success? That question is probably best answered by the words of a well-known British ex-racing driver: "Jaguar may not be the best car of its class in the world, but it is incontestably the least expensive of the GOOD cars."

After a week and 2200 miles in the XK-E Jaguar, we are bound to recognize it as a thoroughly GOOD car. And at the price of $5620 it is really in a class of its own.

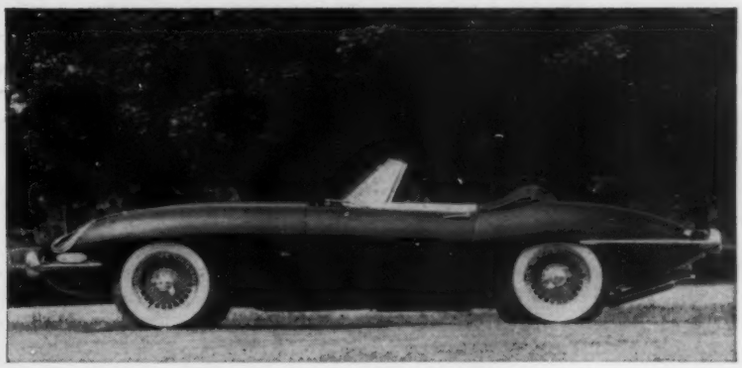
When World War II came to an end, Jaguar at once started the design and development of a series of double-overhead-camshaft engines to replace the Standard-based pushrod engines which equipped the impressive 1½-liter, 2½-liter and 3½-liter types which then made up their model range. The experimental engines had the letter X as identification, and the series started with XA, XB, etc. Their chief engineer William Heynes was not satisfied until they had reached K in the alphabet.

The results were first shown to the public in 1948, in four-cylinder form as XK-100 and in six-cylinder form as XK-120. The four was never marketed, but the six was an overnight sensation after R.M.V. Sutton's demonstration run on the Jabbeke-Ostend highway in Belgium, where the two-seater Jaguar XK-120 was clocked over a flying mile at 132.6 mph.

STREAMLINES

The 3.8-liter engine of the XK-E is the latest development of the series—an engine which has now been in production for over 13 years. Its basic design is unaltered, and it is interesting to speculate whether the E-Type, which (excepting the abortive XK-SS) presents a kind of Jaguar never previously offered for sale to the public, will indeed retain its basic shape for a number of years to come. It most probably will.

The E-Type is derived from the D-Type, with influence from the XK-SS and the prototype entered by Briggs Cunningham at Le Mans in 1960. Some alterations are technical improvements, while others have been introduced as an adaptation to series production. In styling, no concessions



have been given to current fashion, and it will surprise many readers that the body is not the result of thorough wind-tunnel tests. Jaguar's chief aerodynamicist Malcolm Sayer created the body shape on a purely mathematical basis and actual experience has proved the car to have a very low drag.

To do anything else than a full-scale Road Research Report on Jaguar's 150-mph XK-E would be a disservice to the new car, a case of irresponsible automobile reporting and very disappointing to our testing staff. Consequently we picked up an E-Type roadster from Jaguar in New York

City and drove it out to Detroit and back. As a result we feel we can comment authoritatively on all its virtues and vices to give you a true picture of what it would be like to own one. For impatient readers, we'll give a quick recap: The E Jaguar *is* exciting to look at, but its looks are in no way a mask for unexciting performance. It's very fast, very stable, and, all in all, probably the car we'd most like to own of any we've tested in many a month.

GREAT EXPECTATIONS

Our first impressions on taking over this car are not easy to describe. The car is beautiful to look at from any angle, and it was said by many, who saw it in the flesh for the first time when meeting our test crew, that pictures so far published had all failed to do justice to its appearance. The racing-type steering wheel, the large round instruments, the wire wheels and the general low build of the car all contribute to give it a most businesslike air. When getting into the driver's seat, we were wondering most of all whether it would live up to expectations.

The seats had an attractive-looking, deep bucket shape, but those in the test car were an enigma. Provided the occupant sat in the recommended position they were very comfortable, although an adjustment for the rake of the seat back would have been desirable. However, it's only a matter of time before squirming sets in and we found our back being drilled by the horizontal bead on the seat back. It seems to get bigger and bigger as time passes and callouses are a long time in developing. In addition, the seat cushion is shaped with wood and metal covered with foam rubber. Any slouching introduces you to the framework, and it's hard.

We heard that current production cars have improved seats and had the opportunity to try a late example by courtesy of Sholz Buick of White Plains, New York. The seat cushions seem to have additional padding and the lower edge of the seat back is puffier so that it gives support to the small of your back and prevents the beading from becoming annoying. Moreover, it seemed in the later car that seat adjustment allowed further rearward travel than in the test car. Still, there is not much room for drivers over 5′ 10″.

DON'T FENCE ME IN

The seats are placed very low, and the wood-rimmed three-spoked steering wheel is adjustable for both height and reach, which contributes substantially to reduce driver fatigue on a long run. Room around and between the pedals is scarce, and the organ-type accelerator with pendant brake pedal makes heel-and-toe operation somewhat difficult.

The pedals are relatively closely placed, giving room for the clutch foot to reach the floorboard on the left. However, more than one driver found himself hitting both the brake and clutch simultaneously. While the driver's left leg can be extended to almost full length, the vertical room in the foot space is limited, so that this foot, like both of the passenger's, must be splayed to fit in.

The lack of adequate seat adjustment travel made straight-arm driving not quite possible to tall people. Some staff members felt they would have liked the steering wheel higher, although its small diameter kept it from hitting their thighs. For shorter people the seating position is ideal. They have plenty of arm room, all necessary leg room, and the bead on the seat seems to hit them at exactly the right location.

Instrumentation is more than usually generous, but storage space for travel documents, maps, gloves, sunglasses, etc., is scarce, as the cubby-hole in front of the passenger is just adequate to hold cigarettes and matches. There are no door pockets nor any shelf behind the seats. The map-reading light in the form of an unshielded bulb, centrally located on the instrument panel, cannot be used while driving as it tends to dazzle the pilot, while it is at the same time of doubtful value to the passenger/navigator, who has to lean over to his left to get some light on his maps.

The background to the black-lighted circular instruments is pebble-grained aluminum and this surface is extended down to the gearbox cover and floor tunnel. It would have been better to extend the upholstery to cover the tunnel, which would also enhance the appearance of the interior instead of cheapening it.

All-round visibility with the top up is as good as can be expected. Forward, it is excellent, with relatively slim windshield pillars, and the wide rear window and sensibly-placed rear view mirror (adjustable for height) give the driver an almost complete picture of what is going on behind. Side visibility is somewhat reduced, however, and the passenger's advice would be required when entering traffic from side roads at angles less than 60 degrees.

APPETITE FOR LUBRICANT

The engine starts quickly, notching the manual choke lever upward if need be in cool weather. Warming up fast, its operating temperature is a shade over 70° Centigrade and even in traffic and after the performance testing it didn't get much higher than that. A novel feature that helps cut down roar and save engine power for the sole purpose of driving the car is the thermostatically-controlled two-bladed electric fan. When the temperature climbs over 80° C, the fan comes on, shutting off when it's no longer needed.

The engine idled smoothly at about 600 rpm, although when underhood temperatures got warm it became less smooth, but never to the point of bucking or stalling. There was no experience with "vapor locks" and the water never overheated.

Our gas mileage was impressive. An overall average, including testing and very hard driving, of 22 mpg was realized. However, the oil consumption seemed extraordinarily high. A discussion of this matter with the Jaguar Service Department gave us a very interesting explanation for this fact. The engine, being based directly on the D-Type, which was strictly a racing model, has more generous clearances and tolerances than the engine used in the 3.8 sedan and has a larger-capacity oil pan. This is a

(Text continued on page 82; data overleaf)

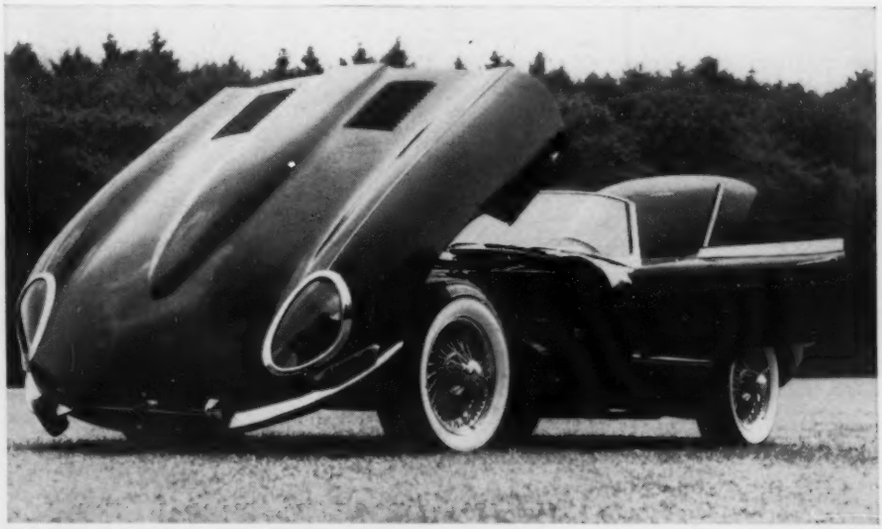
PHOTOGRAPHY: GITTENS

The ball-joint mounting for the rear view mirror can be moved up and down the bar.

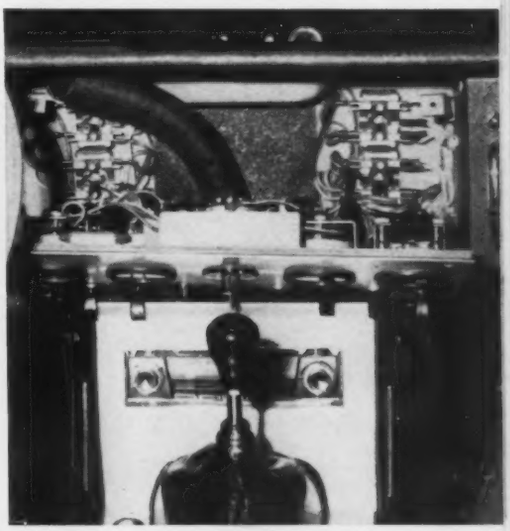
Test crew members Norbye and Williamson discuss the relative merits of two of the top sports cars of all time, widely different in their angle of approach to the same goal.

The clutch and brake fluid reservoirs are mounted on a bracket with asbestos insulation shielding them from hot exhaust pipes.

Raising the top is a simple operation, at standstill or speed, requiring one hand only. Three clips fasten top to windshield.



Extremely rigid frame structure obviates need for stressed skin on most body sections, which contributes substantially to provide easy access to both engine and rear trunk.



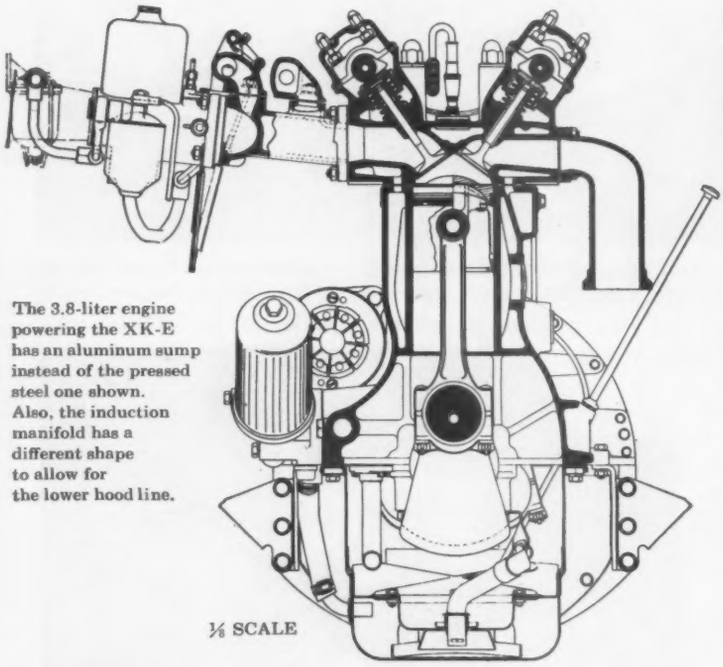
Central section of instrument panel can be folded down to expose the fuses and wiring.

PHOTOGRAPHY: GITTENS

Road Research Report: JAGUAR XK-E

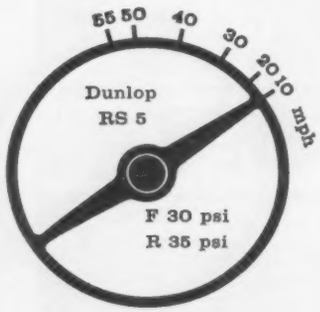
Importer: Jaguar Cars, Inc.
32 East 57th Street
New York 22, New York

Number of U.S. dealers: 400
Planned annual production: 7000
Value of spare parts in U.S.: $900,000 approx.



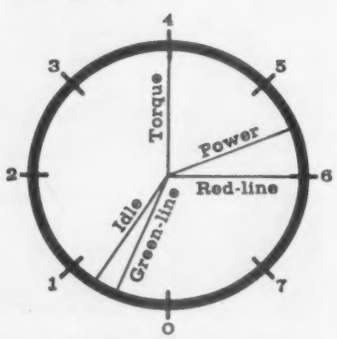
The 3.8-liter engine powering the XK-E has an aluminum sump instead of the pressed steel one shown. Also, the induction manifold has a different shape to allow for the lower hood line.

⅛ SCALE



Steering Behavior

Wheel position to maintain 400-foot circle at speeds indicated.



Engine Flexibility
RPM in thousands

PRICES:

Basic price (roadster)	$5670
Options fitted	None
Options available:	
Hard-top	$252
Chrome wire wheels	$175
Radio	$176
Whitewall tires	$50
Total price as tested	$5670

OPERATING SCHEDULE:

Fuel recommended	Super premium
Mileage	15-25 mpg
Range on 16.8-gallon tank	250-400 miles
Oil recommended	SAE-10W-30
Crankcase capacity	9 quarts
Change at intervals of	2500 miles
Number of grease fittings	22
Lubrication interval	2500 miles
Most frequent maintenance:	
	Clean, adjust and test spark plugs—2500 miles

ENGINE:

Displacement	231 cu in, 3781 cc
Dimensions	6-cyl, 3.43 in bore, 4.17 in stroke
Valve gear	Chain-driven double overhead camshafts, 70° included angle
Compression ratio	9.0 to one
Power (SAE)	265 bhp @ 5500 rpm
Torque	260 lb-ft @ 4000 rpm
Usable range of engine speeds	500-6000 rpm
Corrected piston speed @ 5500 rpm	3465 fpm

CHASSIS:

Wheelbase	96.0 in
Tread	50.0 in
Length	175½ in
Ground clearance	5½ in
Suspension. F, ind., wishbones and torsion bars, anti-roll bar; R, ind., transverse link, unsplined articulated driveshaft, trailing arms with coil springs and anti-roll bar.	
Turns, lock to lock	2¾
Turning circle diameter, between curbs	R 40½ ft, L 38½ ft
Tire and rim size	6.40 x 15, 15 x 5K
Pressures recommended	
	Normal, F 23, R 30 psi; High-speed, F 30, R 35 psi
Brakes, type, swept area	11-in Dunlop disc front, 10-in rear, 461 sq in
Curb weight (full tank)	2810 lbs
Percentage on the driving wheels	52.2

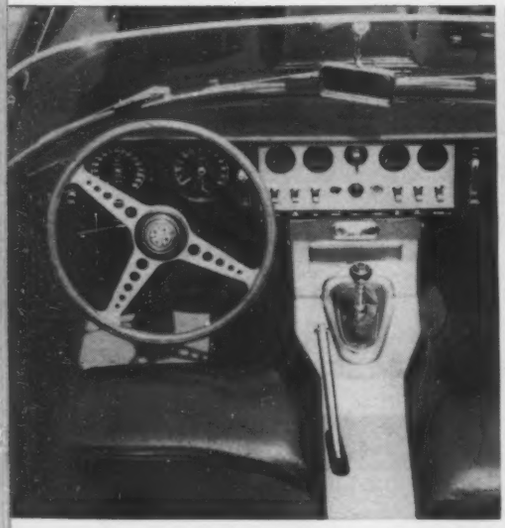
DRIVE TRAIN:

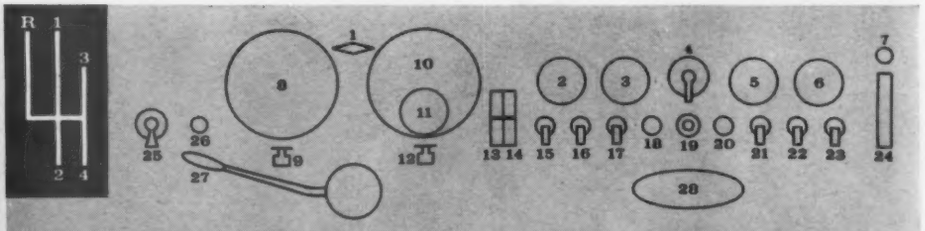
Gear	Synchro	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	3.38	—	11.18	—7.0
1st	No	3.38	—	11.18	7.0
2nd	Yes	1.86	81%	6.16	12.7
3rd	Yes	1.28	45%	4.25	18.4
4th	Yes	1.00	28%	3.31	23.6

Final drive ratio: 3.31 to one.

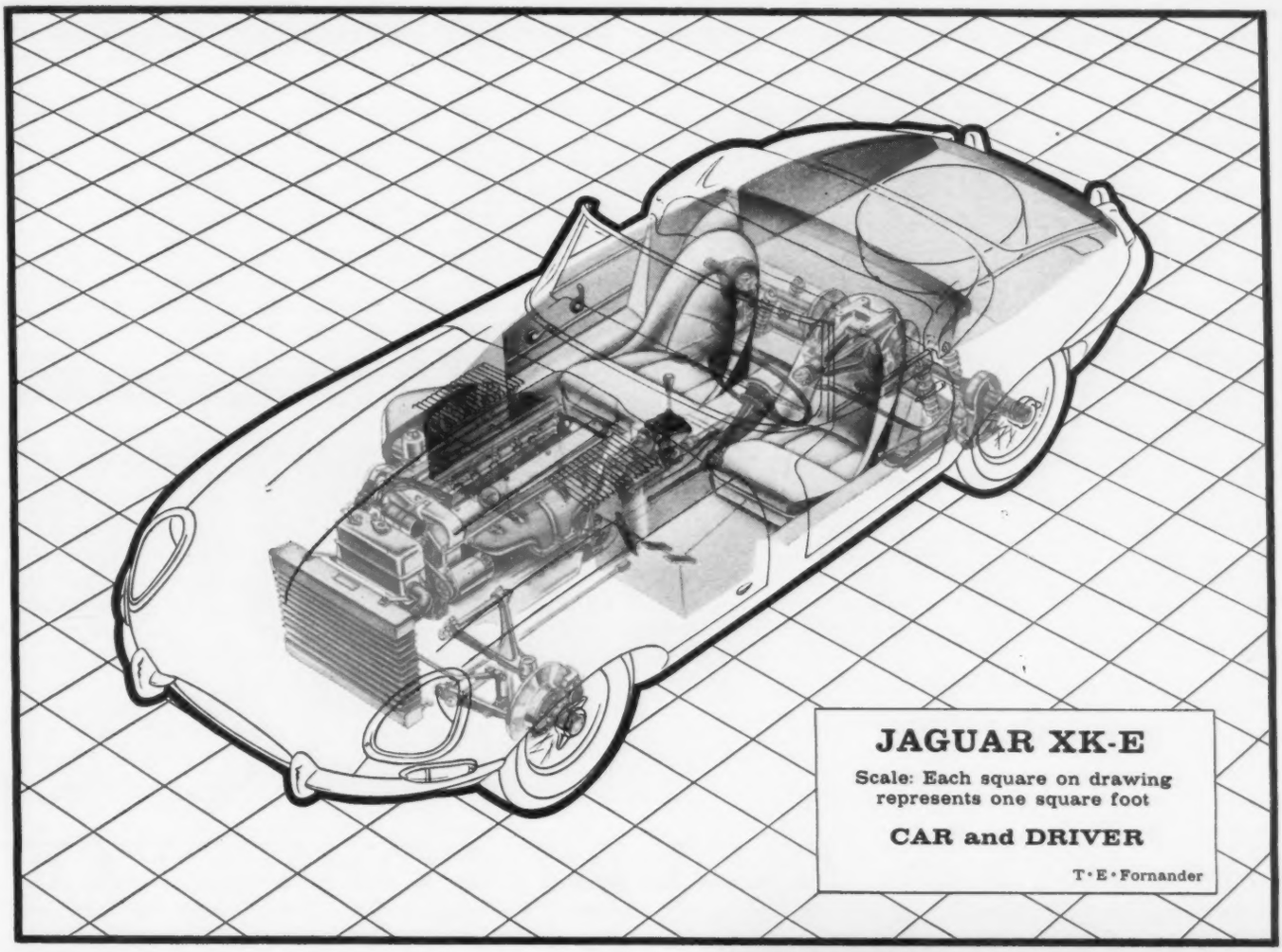
ACCELERATION:

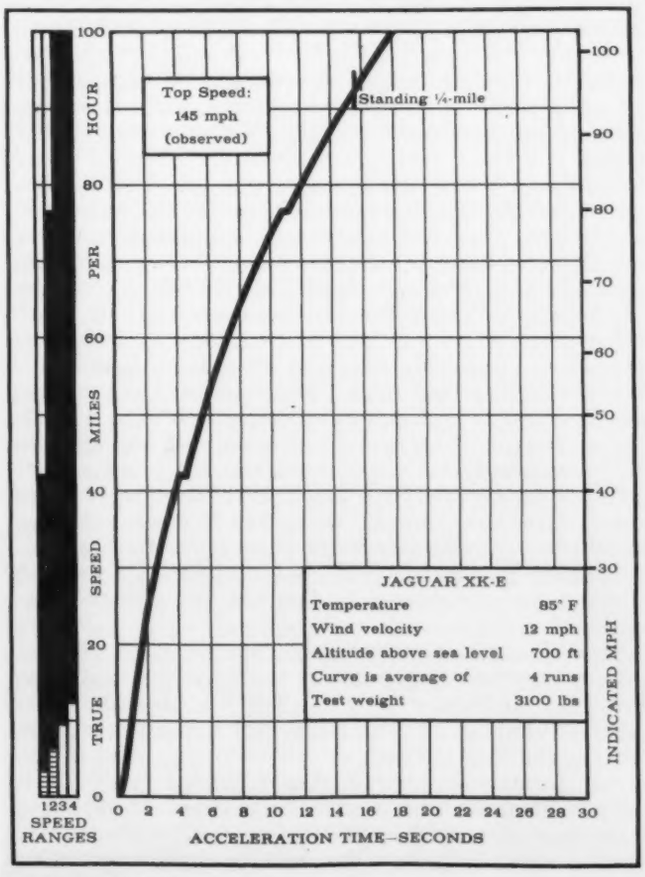
Zero to	Seconds
30 mph	2.6
40 mph	3.8
50 mph	5.7
60 mph	6.3
70 mph	9.2
80 mph	12.2
90 mph	14.9
100 mph	18.2
Standing ¼-mile	15.5

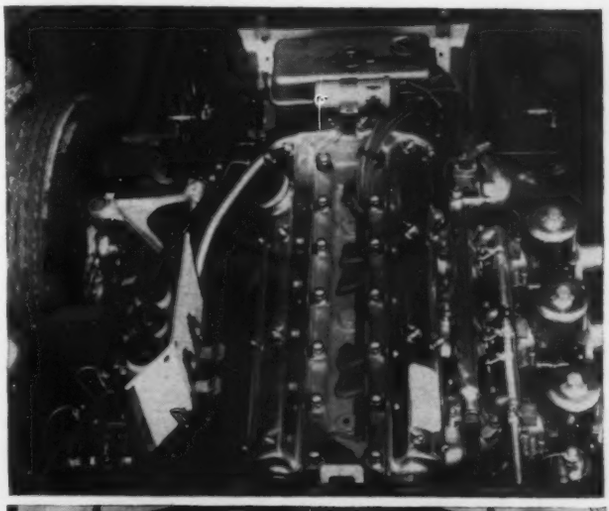


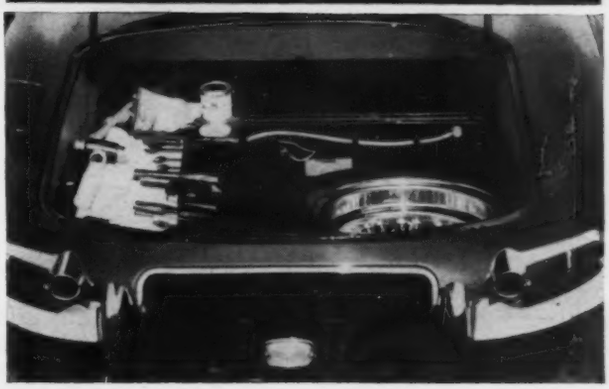


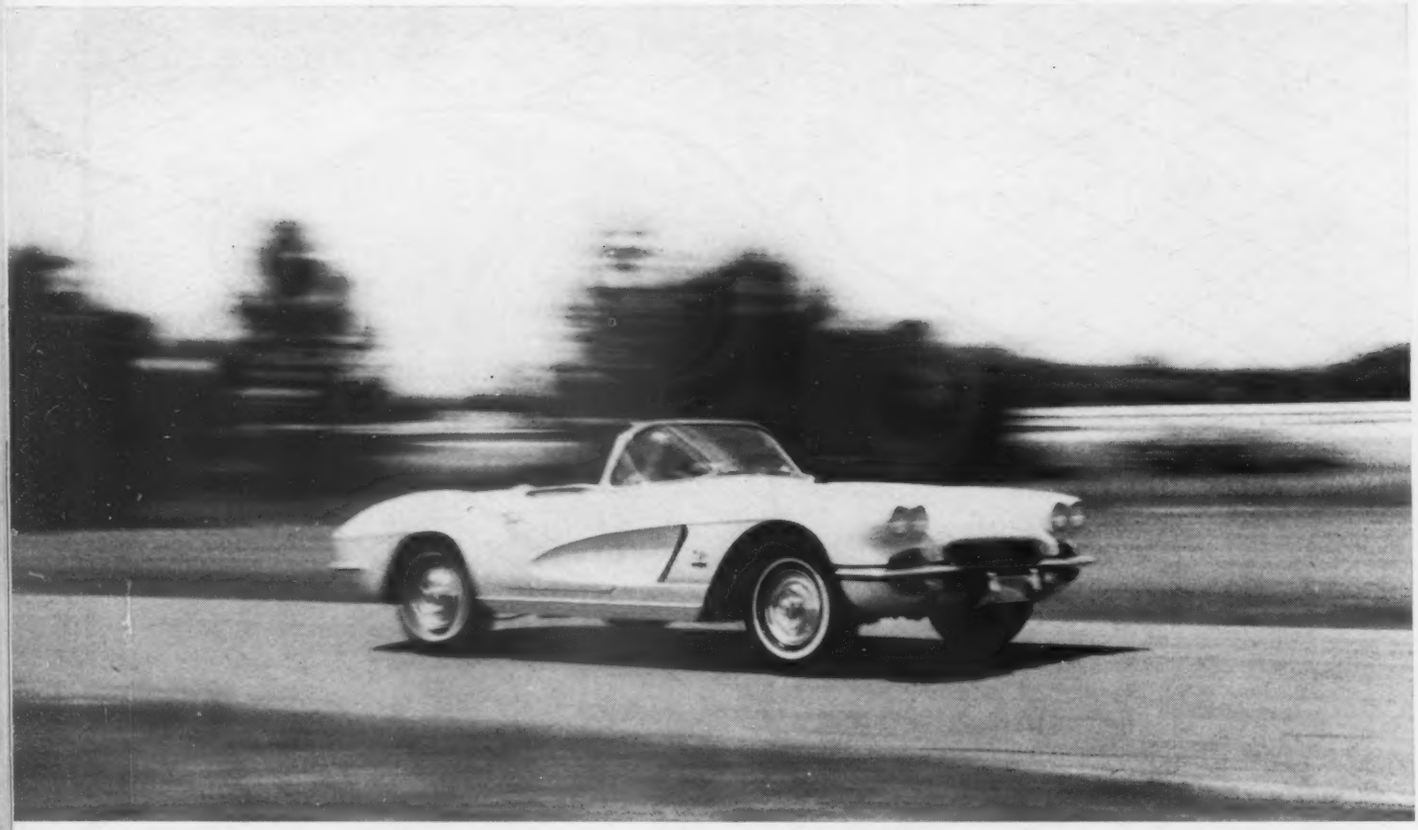
1 Turn signal light
2 Water temperature
3 Oil pressure
4 Headlight switch
5 Fuel gauge
6 Ammeter
7 Choke warning light
8 Speedometer
9 Odometer reset knob
10 Tachometer
11 Clock
12 Clock setting knob
13 Heater air control
14 Heater temperature control
15 Windshield washer
16 Windshield wiper
17 Map light switch
18 Starter (press button)
19 Cigarette lighter
20 Ignition switch
21 Heater fan switch
22 Instrument light switch
23 Interior light switch
24 Choke control
25 High beam switch
26 Handbrake/brake fluid warning light
27 Headlight flasher
28 Ashtray


JAGUAR XK-E
Scale: Each square on drawing represents one square foot
CAR and DRIVER
T·E·Fornander


Top Speed:
145 mph
(observed)
Standing ¼-mile
JAGUAR XK-E
Temperature 85° F
Wind velocity 12 mph
Altitude above sea level 700 ft
Curve is average of 4 runs
Test weight 3100 lbs
TRUE SPEED MILES PER HOUR
INDICATED MPH
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30
ACCELERATION TIME–SECONDS
1234
SPEED RANGES







1962 CHEVROLET CORVETTE

Of course we tested the storming new injected Corvette, with 360 horses from 327 cubes, but this time we added the "smallest" engine with a smooth Powerglide for fun on the open road.

• Zora Duntov says that as far as he's concerned, this is the last time the Corvette's power will be increased—within the present chassis, anyway. It's a reasonable statement, since it's hard to discern a need for more poke than the booming new 327-inch Corvette V8 provides. The 360-horsepower fuel injection version more than makes good on the public relations promise of "added excitement for those wishing the ultimate in performance."

Recently we've always tested the hot fuel-injected version of the Corvette; we followed through on this with the '62 car. But in response to many requests from readers for data on a more normal go-to-market Corvette, we explored the opposite end of the range this year with the "small" (a miserable 250 horses) engine linked to the new aluminum-case Powerglide transmission. In this connection it's interesting that at Byrne Chevrolet's "Corvette Corral" in New York's Westchester County, the stock engine plus the four-speed box accounts for 80 percent of Corvette sales.

First, let's look at this new 327-cubic-inch engine, which makes official what hot-rodders have been doing to Chevys for years now. It's definitely based on the 283-inch engine design, keeping the same bore center-to-center distance of 4.40 inches while increasing the bore ⅛ inch to an even 4.0 inches. (Since the new Chevy II four and six have the same center-to-center distance, with redesign they too could presumably abide a four-inch bore.) Stroke is stretched ¼ inch from the 283's 3.0 inches. Though the 327's rod length and bearing sizes are unchanged, the rod does have a heftier shank section to take the bigger engine's higher stresses. For the same reason all 327s have the heavy-duty aluminum Moraine bearings that were used only on the hot 283s before.

Last year's big-port head, with 1.94-inch intake valves, is now used on the top three of the four Corvette engine options. Only the base engine has the 1.72-inch intakes, fed by a normal four-barrel carb to deliver 250 bhp. The next hotter engine stays with the hydraulic-lifter cam but moves to the big-port head, and is equipped with a new oversized four-barrel Carter carb. Its output is 300 bhp, and it's still available with the Powerglide box. These two engines have double head gaskets for a compression ratio of 10.5 to one (actually about 10.2 to one); for the two top engines one gasket is pulled out to raise the c.r. to a nominal 11.25 to one, actual 11.1 to one. The Duntov solid-lifter cam is also fitted, output being 340 bhp with the big four-barrel and the aforementioned 360 with injection. The famed dual-quad layout, with all its complexities, is now entirely replaced by the new big Carter four-barrel.

Rochester fuel injection goes into its sixth year of production with a major change to adapt it to the deeper breathing requirements of the big V8. Instead of the old relatively complicated cold start arrangement, the new injector has a simple choke valve in a port in the center of the intake venturi plug. When this "strangler" valve is open, the total area made available is adequate to the engine's needs; when it's closed, it has a definite choking effect although the venturi itself—necessary

for metering reasons—remains open. Control of the choke is fully automatic.

As always, the fuel-injected Corvette engine is a sweetheart to drive. Power is excellent, but even more impressive is the torque curve, which is as close to being flat as any we've seen. From its 4000 rpm peak it falls off only 20 pound-feet at the extremes of peak power (6000) and 2000 rpm. In action this engine delivers such constant thrust without surges or flat spots that the feel of acceleration is deceptively docile. The figures prove that performance is much like last year's f.i. Corvette (SCI, December, 1960) up to 80, above which the new one just continues to soar. Though the time to 80 is unchanged, time to 100 is cut from 18.0 to 16.6 seconds. Quarter-mile time is improved from 15.6 to 15.0 seconds, though the terminal speed is up only one mph to 95—not bad for a stocker!

With two aboard, normal tires, no positraction and a 3.70 axle, this Corvette was highly standard. The added power is such that once again rear-axle bounce is a problem on standing starts, in spite of the torque arms above the axle, so the times to low and medium speeds can't show improvement in proportion to the new output. Though the new engine's red-line is 6300 (down 200 rpm from last year), experienced Corvette test driver Bob Clift recommended that we shift up at 5600 rpm for best results over the quarter-mile. His tests have shown that rotating inertia forces above 5600 are such that the extra revs cost more power than they produce, in terms of acceleration. Top speed would be another matter, of course.

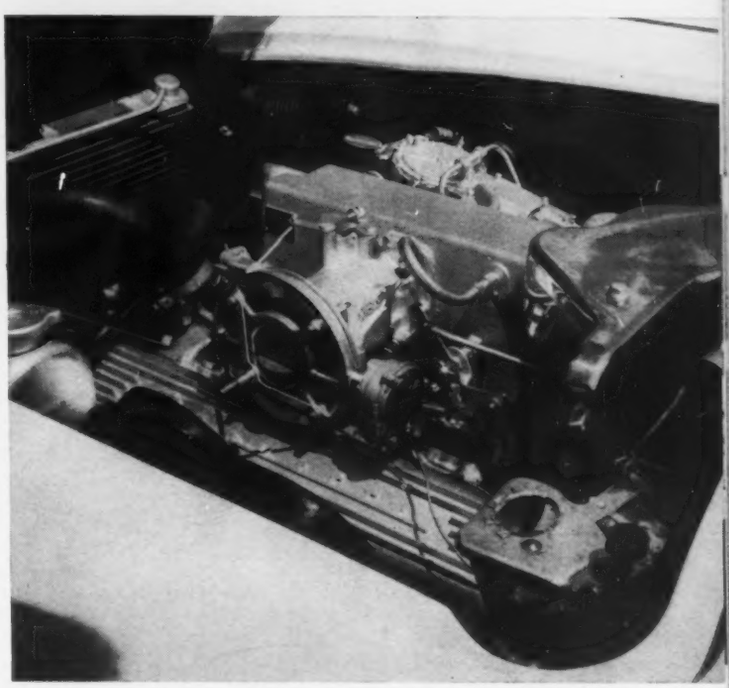
When we jumped out of this injected bombshell into the basic Powerglide Corvette, we expected quite a comedown in performance; we were amazed at how little difference there was. Sixty in 8.8 seconds and the quarter-mile in 16.8 is, after all, not waiting around. Doing this by merely stepping down and holding on offers its own peculiar pleasure, as the solid V8 bites into higher and higher speeds with its distinctive hard, metallic wail. As a comfortable cross-country tourer, the Powerglide Corvette offers a high pleasure quotient.

During our acceleration tests of the Powerglide car it was shifting up at 4500 rpm instead of the specified 47-4800 (tach red-line is 5500), but holding it longer in the lower cog didn't change the times significantly. It makes that shift at about 58 mph, automatically under full throttle, and kickdown can be obtained at any speed up to about 47 mph. Just easing away from a standing start with light throttle, it drops into high at 14 mph. There is some creep at a standstill, though no more than is usual nowadays.

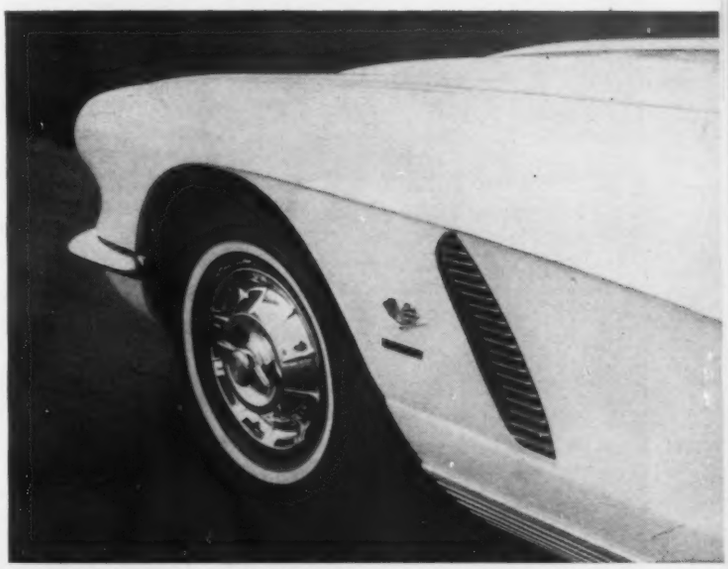
A downshift can be initiated by moving the floor-mounted control lever, but it's not the smoothest operation for braking purposes and the single low ratio isn't actually usable in the speeds where engine braking is most helpful. Thus we don't feel there's much to be gained by downshifting the box to slow down. This does give the brakes a lot of work, but even the standard Corvette binders are remarkably durable these days. For the sake of retaining maximum control, even on the highway, we feel most Corvette buyers will want one of the hand-shifted transmissions, but we'd suggest consideration of the Powerglide for a unique marriage of sports car handling and go with touring car convenience.

For 1962 there are no Limited Production Options (LPOs) for the Corvette; everything optional falls in the RPO (Regular Production Option) category. In gearboxes for example the Powerglide is RPO 313, and for 1962 there's a new RPO 685 four-speed box that's sold only with the two milder hydraulic-lifter engines.

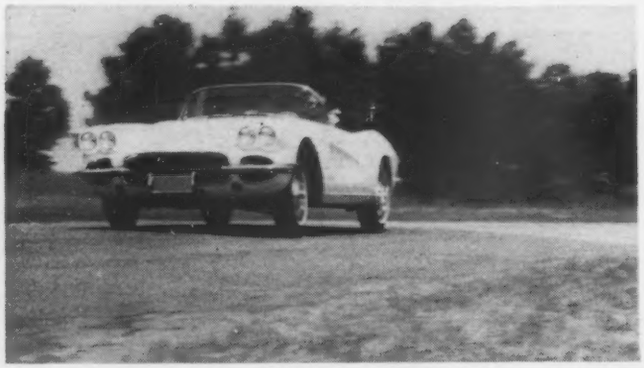
Continuity of design is maintained for 1962 with the only grille change being that the insert is black rather than shiny as in '61.



The fuel injection model has a new choke arrangement for the 327 cubic inch mill, consisting of a flap in the venturi plug.



Beside the grille, other 1962 Corvette recognition points are fine-toothed side cut-out fillers and aluminum rocker panels.



Highway handling of stock 1962 Corvette is fine, but most road racing competitors use the 1959 stiff suspension kit.

Its ratios are 1.00, 1.51, 1.92 and 2.54, with 2.61 reverse. A specially-recommended axle ratio for use with this is the new 3.08 to one cog (RPO 203), a combination which gives an overall low gear of 7.83 to one, for blasting dramatically out of drive-ins and away from lights, yet offers a high highway top gear. Combining 3.08 with the original 2.20 would give a too-high bottom cog at 6.78 to one, so it can be said that the new box makes it possible to offer the 3.08 gear for the two quietest Corvettes.

Positraction is still available, as RPO 675, as is the RPO 687 metallic brake and quick steering kit. You can get the brake linings alone as RPO 686, and, according to CORVETTE NEWS, you can buy over the counter the parts needed to convert to quick steering for about $25. You need one adapter plate, no. 3747588, two studs, no. 3747591, and one U-bolt, no. 2066840. That price would include installation and wheel alignment, according to CORVETTE NEWS. The latter, by the way, is one real bonus to buying a Corvette. It's a top-notch publication with all the factory dope on tuning, specifications and Corvette club activities.

On the surface the 1962 Corvette is merely refined in detail. Its grille is now painted black, and the side cut-outs are now fitted with fine-toothed "grilles" in place of the old triple dentures. Bright metal removed from this area has been placed low on the sides in the form of aluminum extrusions; this shouldn't be hard to remove. Under it all is the durable fiberglass body that's played such a part in keeping the Corvette's resale value at a remarkable high. The car isn't inexpensive but it's a good investment, both financially and in terms of some of the most exciting driving to be had.—*C/D*

ROAD TEST:

1962 CHEVROLET CORVETTE

Price as tested: $3887 with fuel injection and 4-speed gear box
$3897 with carburetor and automatic transmission

Manufacturer:
Chevrolet Motor Division
General Motors Building
Detroit 2, Mich.

ENGINE (4-speed)

Displacement	327 cu in 5370 cc
Dimensions	8 cyl, 4.00 in bore, 3.25 in stroke
Valve gear: pushrod-actuated overhead valves	
Compression ratio	11.25 to one
Power (SAE)	360 bhp @ 6000 rpm
Torque	352 lb-ft @ 4000 rpm
Usable range of engine speeds	700-6300 rpm
Corrected piston speed @ 6000 rpm	3615 fpm
Fuel recommended	Premium
Mileage	10-17 mpg
Range on 16.4-gallon tank	160-280 miles

DRIVE TRAIN:

Gear	Synchro	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	2.66	—	8.36	9.5
1st	Yes	2.20	33%	8.14	9.7
2nd	Yes	1.66	27%	6.15	12.9
3rd	Yes	1.31	31%	4.84	16.3
4th	Yes	1.00	—	3.70	21.4
5th					

Final drive ratio: 3.70 to one. (3.08 to 4.55 range available with Positraction.)

CHASSIS:

Wheelbase	102 in
Tread	F 57 in, R 59 in
Length	177 in
Ground clearance	6.7 in
Suspension: F, ind., wishbones and coil springs, anti-roll bar; R, rigid axle and semi-elliptic leaf springs, radius rods and anti-roll bar	
Turns, lock to lock	3¾
Turning circle diameter, between curbs: L 37 ft, R 36½ ft	
Tire and rim size	6.70 x 15, 15 x 5 K
Pressures recommended	Normal, F 24, R 24 psi
Brakes, type, swept area	11-inch drums, 259 sq in
Curb weight (full tank)	3048 lbs (Automatic) 3045 lbs (4-speed)
Percentage on the driving wheels	48

ACCELERATION:

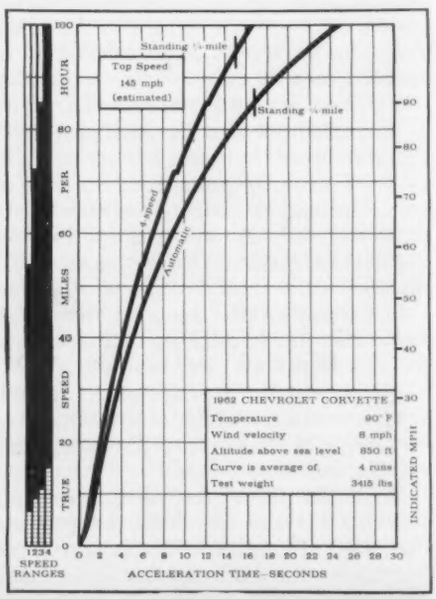
Zero to	4-speed Seconds	Automatic Seconds
30 mph	3.0	3.9
40 mph	4.1	5.2
50 mph	5.3	6.6
60 mph	6.9	8.8
70 mph	8.7	11.4
80 mph	11.0	14.6
90 mph	13.6	18.8
100 mph	16.6	24.6
Standing ¼-mile	15.0	16.8

ENGINE (Automatic)

Displacement	327 cu in, 5370 cc
Dimensions	8 cyl, 4.00 in bore, 3.25 in stroke
Valve gear: pushrod-actuated overhead valves	
Compression ratio	10.5 to one
Power (SAE)	250 bhp @ 4400 rpm
Torque	350 lb-ft @ 2800 rpm
Usable range of engine speeds	1000-5530 rpm
Corrected piston speed @ 4400 rpm	2650 fpm
Fuel recommended	Premium
Mileage	13-18 mpg
Range on 16.4-gallon tank	215-295 miles

DRIVE TRAIN:

Gear	Synchro	Ratio	Step	Overall	Mph per 1000 rpm
Rev	Auto	1.82	—	6.09	10.6
Low	Auto	1.82	—	6.09	10.6
			82%		
Drive	Auto	1.82-1.00	—	6.09-3.36	19.4
Final drive ratio				3.36 to one	



Labor Day Toll: XK-E Succumbs to Corvette

Bill Krause in the E-Type leads Paul Reinhart's Corvette through Turn 9 at Santa Barbara as the cars competed for the first time.

Veritably surrounded by Corvettes, the lone Jaguar fought hard. The E managed to finish third twice in two days of racing action.

Turn 9, again, sees Bob Dickson and Krause still in a nip and tuck battle. The E trailed a Corvette and Porsche to the finish.

• The first round of the battle American enthusiasts have been longing to see—Corvette versus Jaguar on U.S. tracks—ended in a decided victory for the flying fiberglass. The scene was Santa Barbara, California, September 2 and 3.

The flag dropped and Bill Krause whipped the E-Type roadster into the lead in Saturday's event, trailed by a gaggle of Corvettes. By the fifth lap the picture changed completely as they ran Corvette, Corvette, XK-E. Bob Bondurant racked up a 13-second lead and was notably unruffled. Behind him Krause and the E-Type were having trouble fending off a searing attack by Paul Reinhart in another Corvette, this one running two four-barrel carbs instead of fuel injection. Coming out of Turn 9, Reinhart shot past Krause and that's how they finished: Bondurant, Corvette; Reinhart, Corvette and Krause, XK-E.

By Sunday the crowd's curiosity was insatiable. Had Krause been holding back? Was the E running right? Was it set up for the circuit? Bondurant, his car being protested and found to have an aluminum flywheel, was placed in the big-bore modified class. The pack blasted off, Krause assuming an initial three-length lead over Corvettes of Bob Dickson and Reinhart. On the next lap, Reinhart went deep into Turn 9, passing both Dickson and Krause, picking up a length's lead. In the same corner on lap 3, Don Wester's Porsche Carrera passed the E-Type, leaving it fighting hard for third overall. When the checker fell, Reinhart's winning Corvette led the E by 20 seconds at an average 1.7 mph less than Bondurant's Saturday speed.

Santa Barbara's spectacle raises some interesting points in the hot issue of Jag vs. Corvette. For one thing, the 'Vettes were '61s. Based on the data in our '62 test in this issue it's likely the competition will become even more fierce. Yet it's quite likely the E had not been set up the way the British cars have been and these changes could conceivably have helped Krause. As it happened, the early lead by Krause supports acceleration data we recorded. Finally, it would be very un-Jaguar if the factory didn't have a performance ace or two up its corporate sleeve. Inconclusive? Perhaps, but it should make 1962 competition something to look forward to!

—Gordon Chittenden

MERCEDES BUILDS A BRAIN BOX

Editor Karl Ludvigsen interviewed factory engineers in Stuttgart and stormed a 300 SE around the Solitude circuit to get the facts on a fine new driver-oriented automatic.

Transmission designer Förster poses with Rudolf Uhlenhaut, the chief development engineer, for Jesse Alexander's camera during a demonstration run in France. Below, Uhlenhaut takes the 300 SE into a sharp curve on the Solitude circuit near Stuttgart.

• It's not called Daimlerdrive or Mercedomatic; it's merely the Daimler-Benz automatic transmission. Whatever it's called, it's news that one of the world's most engineering-minded car builders has created a self-shifter for its own use. This first full-automatic box from Stuttgart has no fundamentally radical features, but rather a beautifully refined and combined amalgam of known methods to produce a transmission specially matched to Mercedes engines, Mercedes cars, and Mercedes drivers.

Native European automatic transmission developments have been rare and not notably successful. Among the all-mechanical units, only the Hobbs has had some commercial success. The electrical Smiths Easidrive is used by Rootes. Several have combined torque converters with some kind of automatic shift: Rover's Roverdrive, Borgward's Hansamatic, Renault's Transfluide—all defunct. Others have used fluid couplings: Fiat's 1900B, Daimler's Fluid Flywheel, and Mercedes's own Hydrak. But oddly none have followed the very successful and efficient Hydra-Matic line of marrying a fluid coupling to an automatic planetary transmission. This is what Mercedes has finally done.

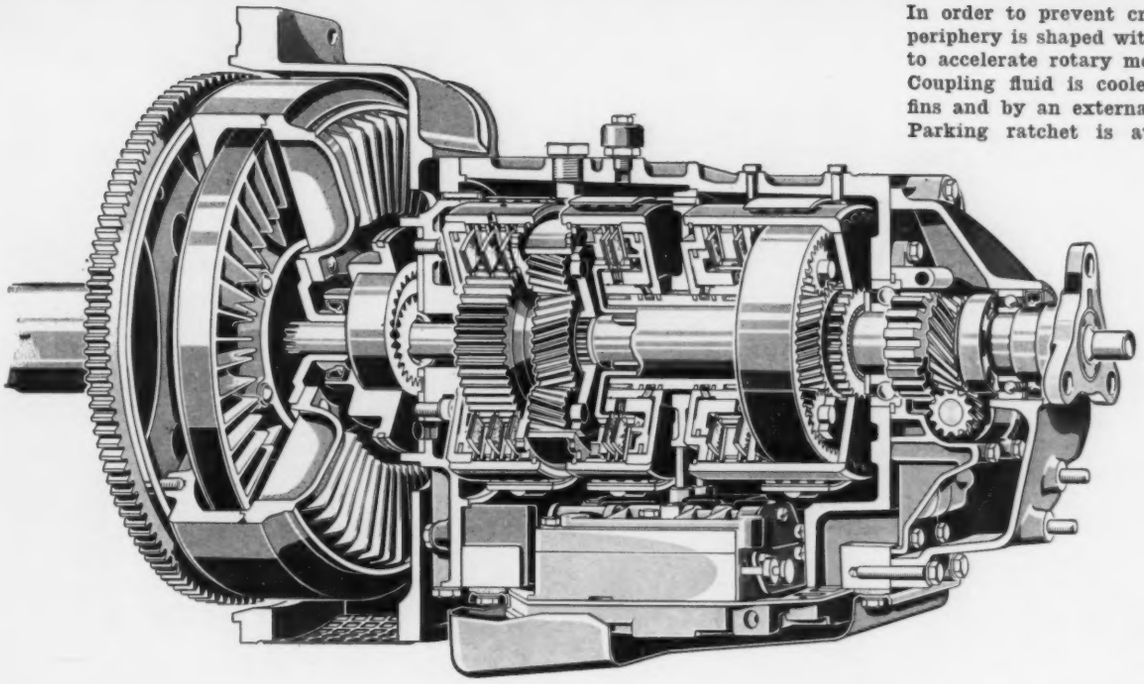
Is it just coincidence that Mercedes began work on this type of transmission in 1956, just 17 years after Hydra-Matic was first announced (in 1939 for the 1940 model year)? That, of course, is the life of a U.S. patent. Chief engineer Nallinger and transmission designer Hans-Joachim Förster had explored other paths, including overdrive and the Hydrak clutch control, introduced in 1957, but finally concentrated on this combination of a hydraulic coupling with a four-speed automatic box. They were designing around a maximum torque capacity of about 190 pound-feet, since that's about what the three-liter six delivers, but they also wanted the unit to be usable on the 220 series and even on the small fours, down to the diesel, with only minor internal modification. This has been accomplished.

The hydraulic coupling itself generally follows Hydrak practice but is refined in one important way. Most couplings have a turbulence-producing ring around their inner diameter to destroy efficiency at lowest speeds and thus reduce "creep"; Mercedes has thrown this out in favor of a new angular contour at the periphery of the coupling (visible in the cutaway) that sharply accelerates the fluid as it makes its rotary rounds. This acceleration gives the coupling a rapid increase in effectiveness (decrease in slip) as the speed of the input turbine increases from idle. By this means the coupling can supply ample torque capacity without having too-slow takeup from rest. An external heat exchanger keeps the coupling fluid cool.

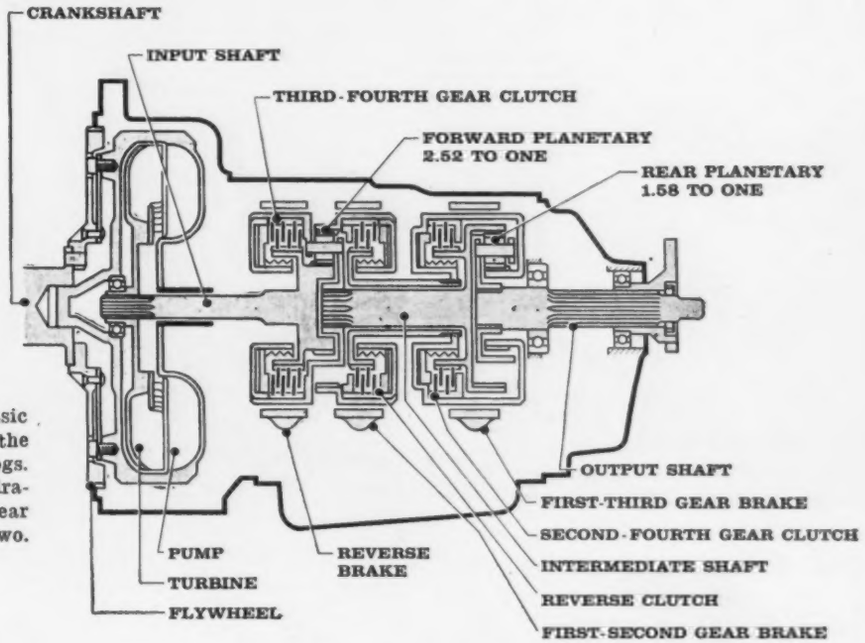
To get four forward speeds and reverse, Hydra-Matic needs three separate planetary gear sets; the new three-speed H-M uses two. Mercedes is proud of the fact that it has squeezed four speeds and reverse out of only two planetary sets by clever planning. In this way the overall length has been kept just three inches longer than the manual box, and the weight has been held to 130 pounds wet—30 pounds more than the manual unit.

As usual in such units, gear selection is by wrapping brakes and multi-disc clutches. The clutch discs, by the way, are supplied by Borg-Warner's spring division, from the U.S.! For first gear the brake bands of both planetaries are applied, giving a total reduction that's the product of the two sets: $2.52 \times 1.58 = 3.98$ to one. For second gear a clutch locks up the rear planetary so only the 2.52 ratio of the front set is operative. For third the two gearsets "change hands," the rear one being braked and the front one locked for a ratio of 1.58. For direct, both brakes are released and both clutches are applied for a solid lockup—excepting the coupling, which is always in the circuit.

Thus far the operation is just like the original four-speed Hydra-Matic, though the latter does actually place the coupling between the two main planetary sets in operational sequence if not in physical fact. Hydra-Matic adds another planetary to get reverse; Mercedes adds another clutch and brake at the front planetary to



In order to prevent creep, the coupling periphery is shaped with angular contour to accelerate rotary motion of the fluid. Coupling fluid is cooled both by radial fins and by an external heat exchanger. Parking ratchet is at rear, to right.



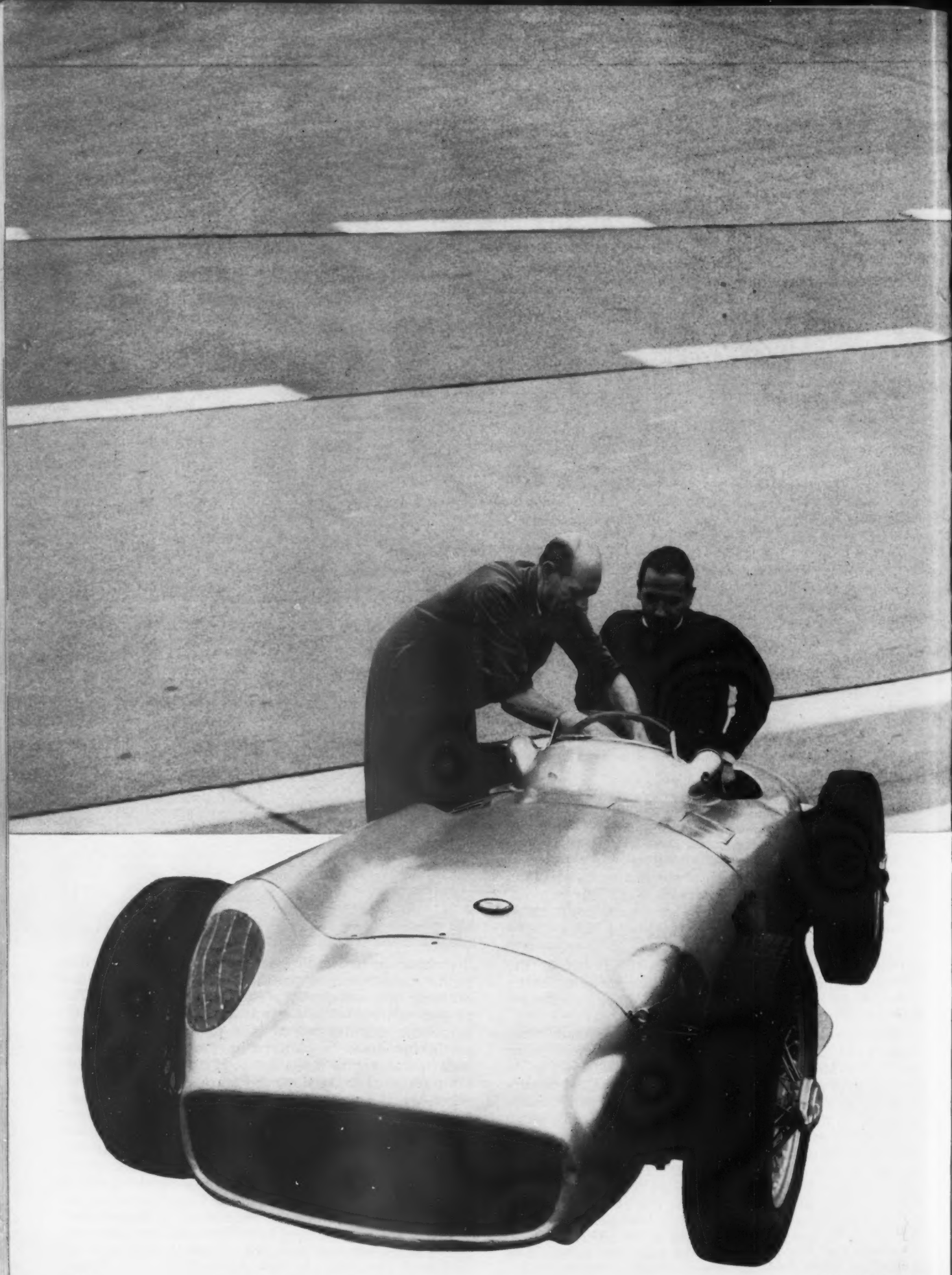
The new transmission consists of two basic elements, the hydraulic coupling and the gearbox with 4 planetary choices of cogs. In this sense it resembles the Hydra-Matic, which however needs three gear sets while Mercedes gets by with two.

get reverse rotation and multiplies the result by the rear set's ratio to come up with 4.13 to one going backwards. Thus the two sets are used together only in low and reverse, the least-used ratios.

Free-wheels can be used to get quick, minimum-wear brake band engagement on full-throttle downshifts, as the Hydra-Matic shows, but Mercedes preferred to do this by hydraulic design instead of mechanical manufacture. The anchors of the brake bands are spring-mounted so that they move slightly as the band's servo action takes effect after the drum rotation changes direction, as it does after that planetary's clutch is released. Motion of the anchor opens a valve that applies full pressure to the brake band just at that instant. By applying the brake fully just at the point where the drum stops turning, so little wear is experienced that the brake bands will never need to be adjusted.

To keep clutch application smooth, the pressure in the attendant hydraulic system is modulated according to the engine's intake manifold vacuum, which Mercedes feels runs sufficiently parallel to engine torque. This torque-vacuum relationship is also used to initiate the automatic upshifts, which take place when the same performance can be obtained in the next higher gear with lower engine revs, hence with lower fuel consumption. Automatic downshifts are signaled by a governor, which acts imperceptibly and only at extremely low speeds. Throttle position, short of full "kickdown" depression, plays no part here, so Mercedes has dispensed with the Hydra-Matic's worst failing: that sudden downshift at part-throttle that really wasn't required. Avoiding this is specially important on wet or icy surfaces, where a downshift and sudden torque increase can flick the tail out suddenly and dangerously.

"Kickdown" to the next lower gear can always be obtained if needed; the governor *(Continued on page 89)*



DRIVING THE MERCEDES-BENZ W196

by KARL LUDVIGSEN

A rare chance to equate theory with practice resulted from this ride in a great G.P. car.

• "The art of adjusting the springing and suspension of a racing car for cornering lies in selecting the point of neutral steer so the cornering power of all four tires is used to the very ultimate, with respect to the power available, and so the driver can easily reach and maintain that limit in a curve." So wrote engineer Ludwig Kraus of Mercedes-Benz. "This," he said, "was a prime consideration during the design of our postwar 2½-liter Formula 1 racing car, the W196." I had a rare opportunity recently to test their success by driving that racing car, in its most characteristic form, at the factory. You already know that in its day—1954 and 1955—it dominated Grand Prix racing. Now we can examine and experience why.

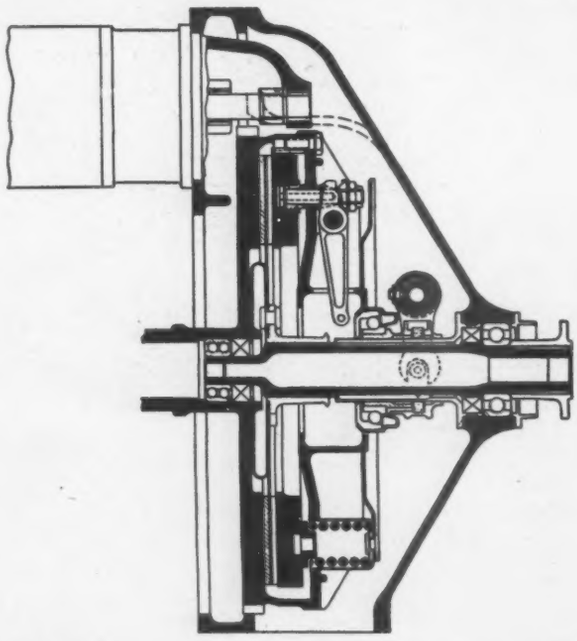
Looking for ample power for fast-track superiority, Mercedes built an injected straight-eight that they knew would be heavy and complex. At the time, though, they said a vee-eight layout would have been even heavier, a view greeted with skepticism by some designers. After all, they said, the straight engine's extra crank and bottom end weight—especially with the Mercedes roller-bearing construction—should overshadow the bent engine's extra cam drive gears. Did it really make a difference? We can now compare weights and see.

Though it was built around two intricate welded sheet-steel cylinder blocks, the 1954 engine was primarily of a high-silicon aluminum alloy (silumin) and weighed 451 pounds. To reduce weight for 1955 many low-stress parts like covers and cam housings were cast of magnesium, the result being a cut to 429 pounds. For comparison, the all-silumin Lancia D50 V8 of the same era weighed 382 pounds, while the experimental Coventry-Climax "Godiva" V8 weighed 340 pounds—probably without some accessories. One of the most complex 2½-liter V8s, the Brooke-Weston Speed Engines Limited design, weighed about 400 pounds. As a matter of interest, the Mercedes-Benz 1½-liter W165 V8 of 1939 weighed 442 pounds, including the added burden of two Roots blowers.

Evidence thus indicates that an unblown 2½-liter V8 Mercedes engine might well have been lighter. Just to confuse everything, though, we have a weight of only 330 pounds for Gordini's Formula 1 straight-eight! This

engine was such a paragon of simplicity, though, that it may not be fair to mention it here. At the other end of the straight-eight scale is the M196S engine of the 300SLR sports car, which had a more elaborate accessory drive to accommodate the generator and which was made entirely of silumin alloy. It weighed no less than 517 pounds. (One digression on terminology: Mercedes refers to car types with a "W" prefix, for *Wagen*, and to engines with an "M" prefix for *Motor*. Thus W196 refers to the whole car and M196 to the engine only. The "S" suffix identifies the sports edition.)

This G.P. powerplant was bedded down (using a transverse mounting plate, as in an Indy car) in a highly sophisticated chassis. The neat space frame was fully calculated for stress and was mainly made of tubes about an inch in diameter. Though it weighed



Single-plate clutch was a weak point on SLR (shown) and W196. Its hollowed-out central shaft is a triumph of machining art.

only 79 pounds, it was considerably stiffer in torsion than the 181-pound 300SL space frame!

A prime design goal was the lowest possible center of gravity, hence the engine was canted over to the right at 30° to the horizontal. The use of a secondary drive shaft from the center of the engine to the clutch allowed the designers to locate the heavy crankshaft 2.6 inches lower than the diameter of the clutch would otherwise have permitted. Ferrari did essentially the same thing with his outboard-clutch transmission design. Ground clearance was cut to the bare minimum at 4.1 inches. The result of all this was a center of gravity just 12.2 inches above the surface, which compares well with the 22 inches of the Mercedes 220 and the 14 inches of the Grand Prix Scarab.

It's well-known now that Mercedes felt the best way to achieve the handling goal set up by Kraus was to build in very slight understeer over most of the cornering range but to induce oversteer at the very limit. This was generally accomplished, though the cars did have more basic understeer than was really desired. (For more on this subject see "Uhlenhaut on the New Formula," C/D, April, 1961.)

Some dimensions may interest those who'd like to investigate this "chassis tuning" in depth. The roll centers were 1.4 inches above ground in front and 6.9 inches above at the rear. The basic front spring rates varied from 61.5 to 72.5 pounds per inch depending on the circuit, while the effect of the torsion anti-roll bar increased the rate to 111 pounds per inch for jounce of a single wheel only. At the rear the chassis tuners could select torsion bars ranging from 100 to 117 pounds per inch in stiffness. Front and rear tracks were 52.5 and 53.5 inches respectively, while wheelbases of 92.6, 87.1 and 84.8 inches were used to suit different circuits. Weight distribution ranged from 47/53 front/rear with an empty tank to 40/60 with all fuel on board. The average, design distribution was 45/55.

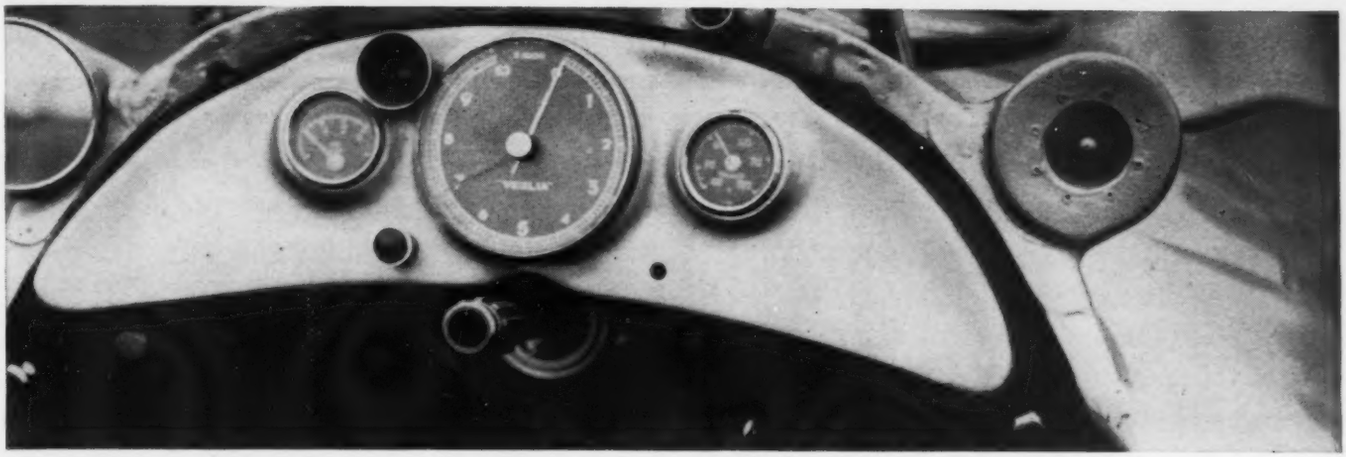
The W196 was built in profuse permutations of the wheelbases, brake layouts and bodies available. The car we're dealing with here can, however, truly be said to be typical. All the 1954 cars had the longest 92.6-inch wheelbase, with inboard front brakes and with both open and enclosed bodies. For the beginning of the 1955 season, some of these cars were remodeled to 1955 style by fitting cleaner bodywork—though with a big bulge for the straight ram pipes of the lighter '55 engine—and by making many other detail changes like the addition of a brake servo. These cars are easy to detect because the top front frame crossmember still has the built-in pipe for the old curved ram tube layout. Dry weight for this variant should be about 1480 pounds.

The above, you'll gather, is the type of car I tried. Machines like this raced in Argentina in 1955, and Fangio won the Belgian G.P. that year in a car so like this that it may be the same one. Karl Kling drove a similar car at Spa and also at Monza, the last race of the year, so this is probably the Kling Monza machine. A similar chassis, number 1954/5, was selected to be chromed and lacquered for display in the superb Daimler-Benz Museum; the test car was number 1954/6. Needless to say, whether it was typical or not didn't concern me as I peered upward at the threateningly cloudy weather over the short loop test track between the Mercedes factory and the Neckar River. I'd hoped for a sunny day on the Nürburgring, but then you can't have everything!

A small group of blue-suited factory mechanics surrounded the W196, a dull silver object that breathes brute force rather than beauty. It's misleading, for the machine is sophisticated rather than stunning in action. After viewing the double-ended parallel-straight track I was led to a large gray-painted wooden box that I'd assumed contained plugs or parts. The lid was flipped up to reveal six cycle-type crash hats, each in its own niche and each a different size, and six pairs of goggles! Talk about preparation. . .

Suitably lidded, I set about climbing aboard. The detachable wheel had already been removed; indeed the mechanics were quick to remove the wheel at every opportunity, apparently on the assumption that the driver wants to quit the car the instant it comes to rest. My feelings were naturally just the opposite. They were going to have to drag me out of that car.

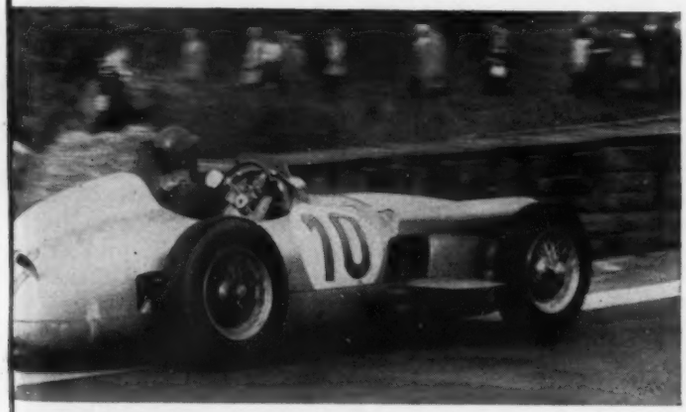
The wheel is central and the sides are very wide, so it's a long stretch into the cockpit and essential in my case to step on the seat first. Then I eased myself down into the very roomy cockpit and the equally roomy seat. So spacious was the seat, in fact, that I guessed this car had been specially set up for journalist trials and in particular for my rotund colleague Laurence Pomeroy! Covered in the traditional plaid, the seat was well cushioned and canted deeply to the rear so that my knees were bent quite high and my torso leaned well back. It's a relaxed position that has the added advantage of taking up a minimum of chassis space. My legs



Dash is a paragon of simplicity, designed to cause the driver the least possible disturbance. The big chronometric tach is jerky in its movements. Right-hand rear-view mirror has been removed by chance; the steering wheel is missing on purpose.

were spread almost a yard apart around the clutch housing and near-central drive shaft in a splayed stance that looks odd but feels fine.

The four-spoked wheel was locked onto its ten splines into a position that's physically near-vertical but actually feels more horizontal, since the driver's leaning back so far. The grooved wooden rim has a hefty feel, and at rest there's a surprising inch of lost motion in the steering gear. Scanning the sculptured dashboard was easy since there are only three dials: oil pressure at left, 10,000 rpm tach with telltale in center, and water temperature at right. These are mainly for show since the engine will run long periods with no oil, the desmodromic valve gear allows wild overrevving, and the coolant temperature is thermostatically controlled.



Any resemblance here is only in the car. Above, Fangio booms to a win at Spa in 1955 in long-wheelbase W196; below, Editor poses in the virtually identical machine he drove. Very wide bodywork covers the most complicated racing car yet created.

A switch on the dash sends battery current to the whirring fuel pump that prevents vapor lock in the fuel injection, while a big key under the panel at the right switches on first one magneto, then the other, then both. My only instructions were to get on with the clutch, not fooling around but engaging it fully, and during starting to hold out a small spring-loaded knob under the panel to the left. I guess it retarded the ignition but it didn't seem to make much difference since the engine barked readily to life during a first-gear push-start even though I'd botched the knob routine.

My first problem in driving the W196 was to dominate this trial out of all proportion: getting the hang of the shift pattern. There are five forward speeds, with first over to the left and forward. You can't get into that side of the gate without first pressing a button on top of the knob, since first is intended for starting only, and an additional latch keeps you out of reverse. But it was the top four speeds that were baffling. In a normal four-speed box, all your upshifts are made with a straight-back fist yank, except for the 2-3 shift across the gate. On the top four Mercedes gears you shift up by shoving straight *forward*, and the normal 2-3 motion would jump you from second all the way to fifth!

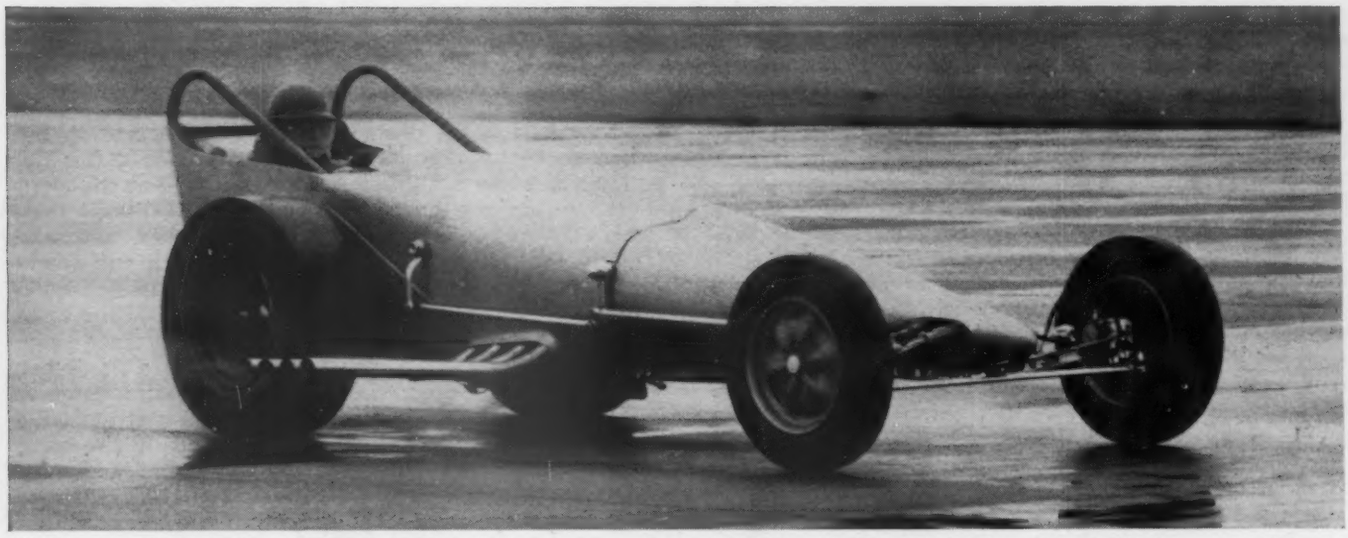
You'll gather there were lots of things to unlearn. It was consolation to know that Stirling Moss's tendency to go from second to fifth led to the creation of an elaborate gate interlock (first used in the Mille Miglia on the 300SLR) and that notables like Fangio and Fitch were fooled by the gate at first. But you learn. The first lesson was a spinal chill when I realized I'd "upshifted" from third down into second with a straight-back motion, and just barely engaged the clutch enough to send the exhaust note skyrocketing. I caught the error in time and didn't make it again but it was never possible to forget the box entirely.

The "trouble" with the Mercedes shift is that the Porsche-type synchromesh is so smooth and powerful that the lever feels the same going into any slot at any speed! It's not like the Birdcage Maser, which will give your palm a slap and grate angrily if you're way off on your shifting speeds. The big lever moves in an arrogantly positive way in a machined, vintage-style gate with long fore-and-aft travel. In its use of synchromesh the W196 is still ahead of most modern G.P. cars, but the gate itself definitely recalls the 1930s.

I took care to bring the clutch fully home before turning on the tap, and it behaved impeccably in spite of its reputation as a weak spot in the design. Its linkage has some over-center *(Continued on page 80)*

TWO FOR THE QUARTER

Six thousand miles apart two men are working to revolutionize one phase of racing in their respective countries. Both are concerned with building machines to record the lowest elapsed times and highest terminal speeds over quarter-mile courses. Dennis May relates Sydney Allard's efforts to transplant the American dragster to English soil while Griff Borgeson details the exciting plans of Californian Jocko Johnson to produce a new species at home.



Allard gives his supercharged dragster a shakedown run on a wet course. Unlike the U.S., England requires full bodywork on the cars.

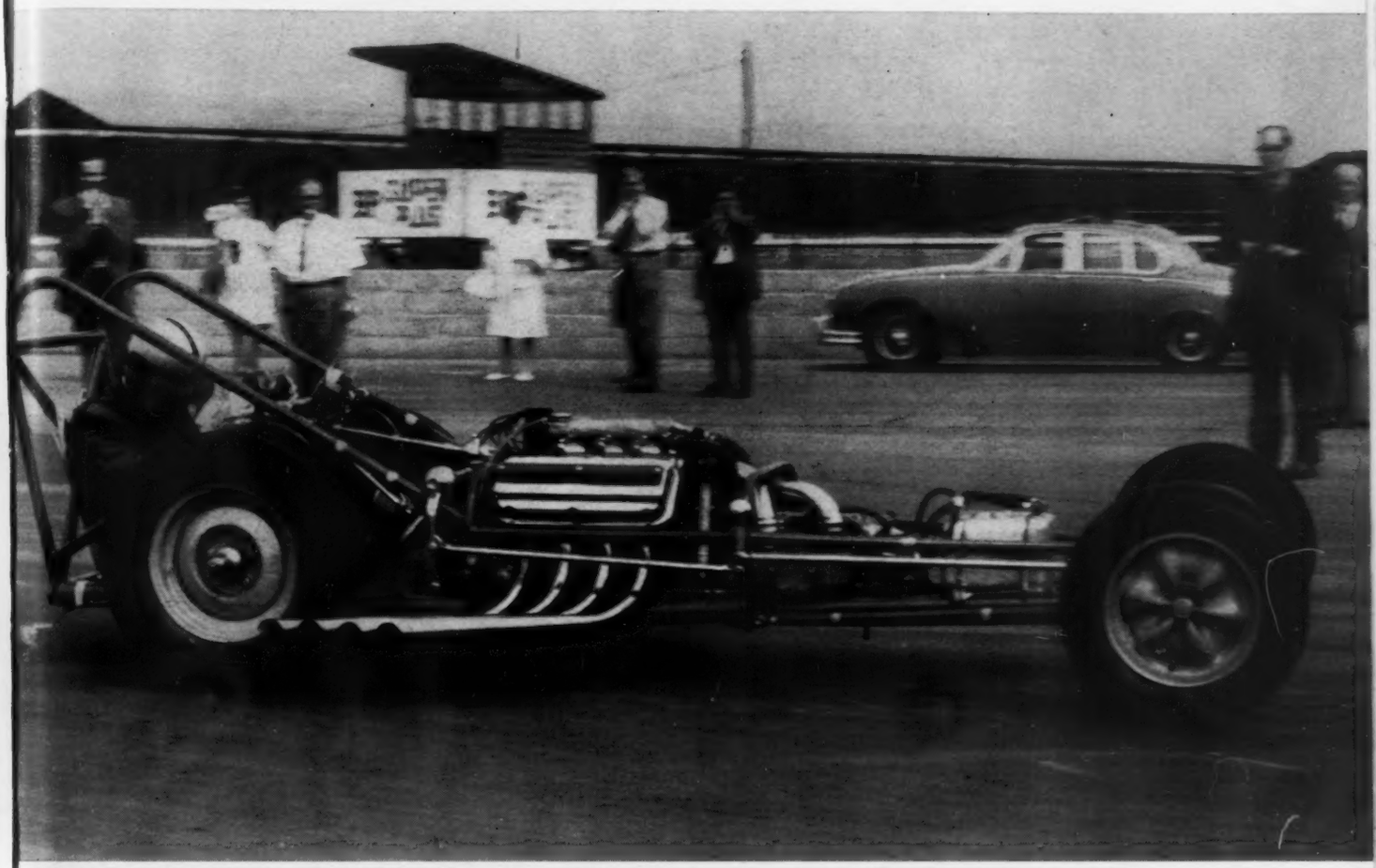
ALLARD

• In developing England's first slingshot dragster, Sydney Allard's objectives have been threefold: 1) To create an indigenous audience for a phenomenon the British have so far merely read about and likely not even envisioned with any accuracy; 2) To encourage the construction in Britain of other cars capable of giving his Allard some realistic competition; 3) To reinforce the American drag racing fraternity's case for FIA recognition for the standing quarter-mile as an international and world record distance.

Designed under Sydney's supervision by Dave Hooper, a long-service Allard engineer, and built at Allard's south London place by John Hume, formerly chief racing mechanic at Cooper Cars, the Allard dragster isn't as close a copy of American originals as it might be because its authors didn't have direct access to U.S. sources of the kind of detailed technical data they needed. Their method was therefore to mug up such relevant facts as could be gleaned from published articles (including this magazine's description and drawing of Chris Karamesines's incredible Chizler, *vide* October, 1960 issue) and interpret it in the light of common sense and their own engineering experience.

Thus in its general configuration and the relative positioning of its main masses the Allard follows the U.S. dragster norm, though both its wheelbase (108 inches) and overall length (162 inches) exceed the average. Chassis design as exemplified by the Chizler seemed to Allard and his team to border on the crude; so *their* chassis, for better or worse, takes the form of a simplified space frame with fully duplicated longitudinals—3-inch diameter tubes at sub-hub level, surmounted by and spaced about nine inches from parallel 1½-inch-diameter members. In plan, both pairs of fore/aft tubes run parallel from their rear ends to a point just ahead of the engine, then converge to a junction at the center of the front axle; this is of the usual beam type, much drilled for lightness, and a relic from a Ford truck. Tubular hoops—or more exactly part hoops, for they aren't carried under the car—straddle the chassis immediately behind and in front of the engine bay. Material for these, as for all members except the 3-inch lower longerons, is 1½-inch mild steel tube, all joints being welded. The anti-roll cage is much like any other modern dragster's. The rear end is springless, front suspension being by a transverse leaf spring with adjustable Armstrong lever type shock absorbers. Front axle locators are tubular radius arms no less than 49 inches long; these were originally back axle ties from a Ford Pilot, the Dagenham factory's early postwar V8 sedan. The car weighs 1460 pounds dry, carries 60% of this on its back wheels in the unladen state, obviously more with the driver aboard. Fuel injection is by Hilborn-Travers system, consumption being around one mile per gallon.

The present GMC-Potvin blower installation is driven at engine speed and gives a boost of 20 psi at the 5000 rpm at which the Chrysler develops its 480



The British motoring press was treated to the music of a blown Chrysler mill and screaming slicks biting the asphalt at Silverstone.

bhp. Allard Motor Company is a distributor for the British Shorrock compressor, and this eccentric-vane device will likely replace the existing GMC blower when Shorrock has had time to develop a unit big enough to feed the 354 cubic inches.

At the time of writing the car has only made one public appearance, though during a demonstration before a press audience at Silverstone it turned a promising 9.5 seconds for the quarter mile from a walking pace rolling start. This was done sans "bodywork," which can hardly be valueless at a terminal speed of around 160 mph.

Brakes all around being obligatory under British sprint laws, the Allard's front wheels carry Girling discs, ex Ford Zephyr. All-wheel braking being a practical necessity, as well as a "legal" requirement, on the short courses available in Britain, the front wheels have to be more robust than the wire-spoked motorcycle type used on American dragsters; as you can see, the Allard's front wheels are ex Lotus, crimped magnesium alloy discs. They carry 5.25 x 16 Dunlop road racing tires, the rears being 7.00 x 16 Inglewood Dragmasters with 7½-inch treads remolded onto Indianapolis casings.

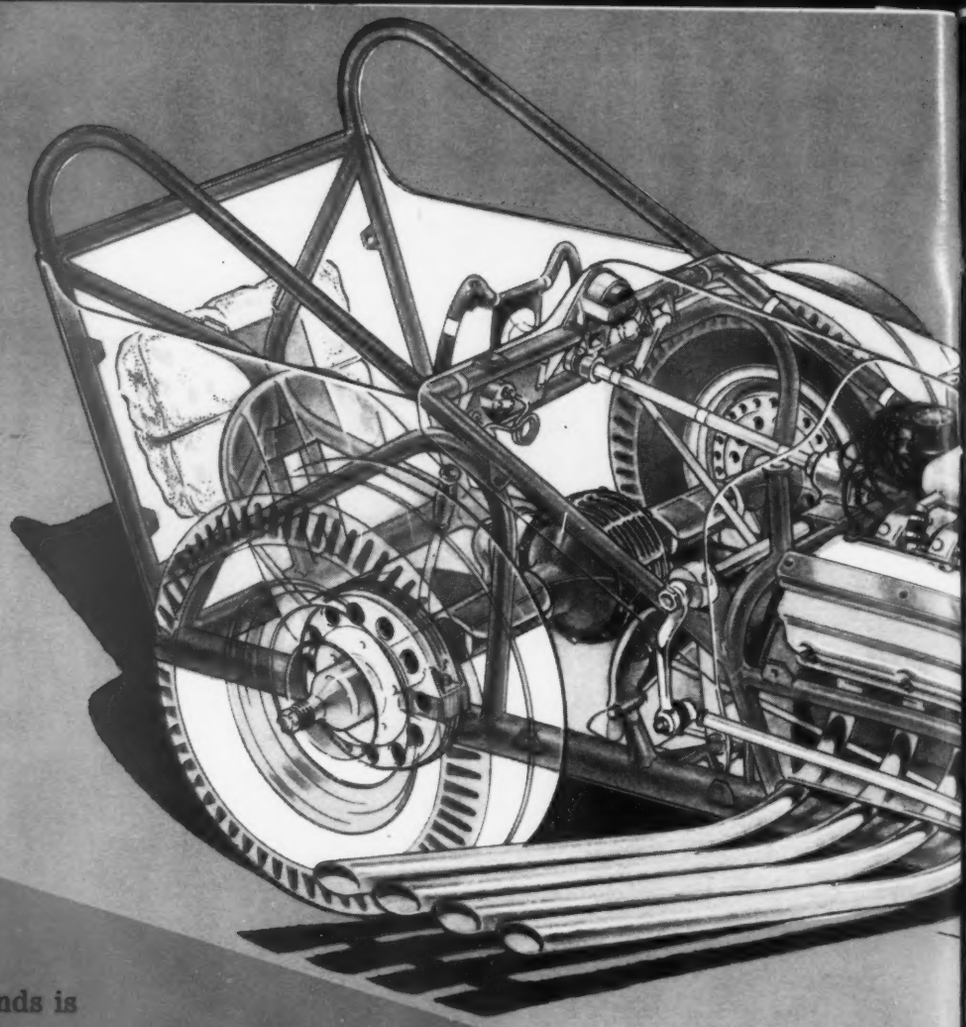
Steering gear consists of a Marles reduction box, outrigger shaft, drop arm and dual drag links with a combined length of 84 inches; these are connected amidships by a slave arm. The steering wheel is of eye-glass type, as used by the late Goldie Gardner on his MG record cars.

Originally, the Allard used a Schiefer double-disc clutch unit—another U.S. import, of course; but after two Schiefers had gone up in smoke—which Sydney allows may well have been the fault of his own inexperienced manipulation—they switched to a Borg and Beck clutch of the unique type developed for the 16-cylinder B.R.M. This has five plates and is only 7½ inches in diameter. So far, it's held up.

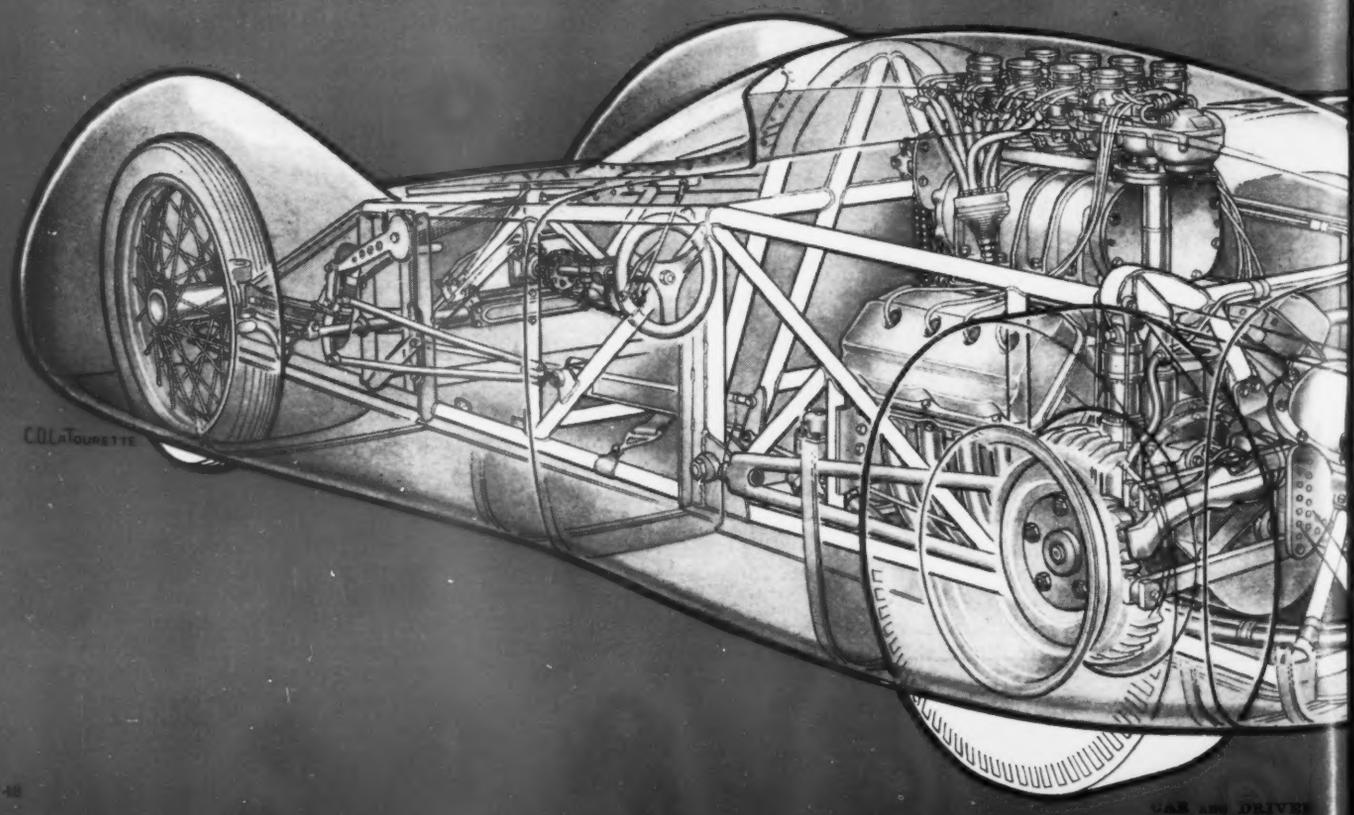
The back axle is cut-down British Ford, giving a tread of 41 inches, compared with 51 inches at the front. To improve chances of the car staying on course in the event of losing a wheel at speed, a normal differential, devoid of locking devices, is employed. Initial braking from terminal speeds is by triple parachutes packed in the roll cage framing.

In contrast with many traditional British sprint cars, this highly untraditional Allard is meticulously finished, with its chassis sprayed in the shade of blue that Sydney always favors for his street cars, its panelwork blue and white (perhaps as an oblique tribute to the U.S. origin of so many of its constituent parts) and innumerable small components gleamingly chromed. The project has received liberal press and television coverage in Britain, and Allard, smart businessman that he is, isn't giving anyone the chance to fault his firm's product on hygienic grounds.

On the technical side, though, he and his associates are the first to admit they still have more to learn than they've learnt. —*DM*



" . . . 281 mph in 6.40 seconds is possible in the quarter mile."



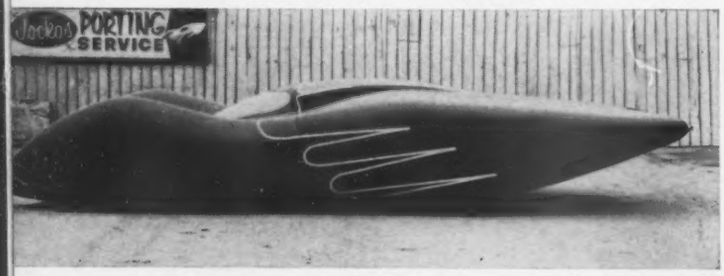
" . . . it turned a promising
9.5 seconds for the quarter mile
from a walking pace rolling start."
BRUCE

JOCKO

• Jocko's real name is Robert Johnson but hardly anyone knows that. Most of the hot-engine builders in the greater Los Angeles area know that Jocko's Porting Service—at the swinging address of 5678 Cherry St. in Long Beach—is the place to go for the top competition touch. And a lot of old timers who've been around drag racing for more than a couple of years know that on the rare occasions when Jocko goes racing history is likely to be made. Jocko's about to go racing again.

His fame began on May 31, 1959 when a red and white streamliner—the first full streamliner ever seen in drag racing—was pushed toward the starting line at Riverside International Raceway. Although it was one of the most spectacular appearing machines ever seen at any drag strip it attracted little attention. This was because driver Jazzy Nelson for months had been burning down local strips in Jocko's toad-low streamliner and all the team had achieved was a streak of scattered engines. But things were different for a while on that memorable Memorial Day.

The Riverside record, which was also *the* national "1320" record, was Chrisman-Cannon's 181.81 mph in 8.54 secs. Jazzy got cleanly off the line on his warmup run and thundered through the clocks at 175 in 8.80. The P.A. system blared the significant news and the next time Jocko's car came to the line all eyes were on it. Jazzy made another warmup pass, turning 174 in 8.90, and then Jocko tipped the nitro jug to cut a fast one. The initial acceleration was horrendous and the car shrank from sight at least as fast as a rock



Low and mean-looking, Jocko's latest dragster was developed by long hours of planning before aluminum body was constructed.

down a mine shaft. Then, about 200 feet from the first timing light, a puff of smoke told the bugeyed crowd that the hard-luck engine had melted another piston. Nevertheless, Nelson *coasted* through the clocks at 178.21 mph and set a new all-time ET record of 8.35 seconds.

For at least a couple of years it had been recognized pretty generally in drag racing circles that *the* obstacle to quicker and faster performance was not horsepower or torque but the transmission of these to the pavement. Traction is the answer and Jocko determined to become its prophet. He sought to serve traction in his latest car by three media: streamlining, suspension and method of coupling engine to drive shaft.

The previous car's front suspension by '34 Ford axle and three-leaf Model A cross-spring had worked well and was incorporated in the new machine. But the conventional, solidly mounted rear axle had to go. During the nine month gestation period he poured over existing literature and was most impressed by the rear suspension layouts of the prewar Mercedes-Benz W125 and W163. He drew up a de Dion rear end with the axle tube spigoted and swivelled at its center to absorb torsional forces. For driving axles he adapted half shafts from a front-drive military vehicle, each having an inboard and outboard Bendix-Weiss constant-velocity U-joint. The large splines of these joints narrowed the choice of a rear end to a Packard assembly with cogs ranging from 4.35 to 4.69 to one. So Jocko designed his own quick-change box to mate with the Packard unit and to provide overall ratios from 2.96 to 3.4 to one.

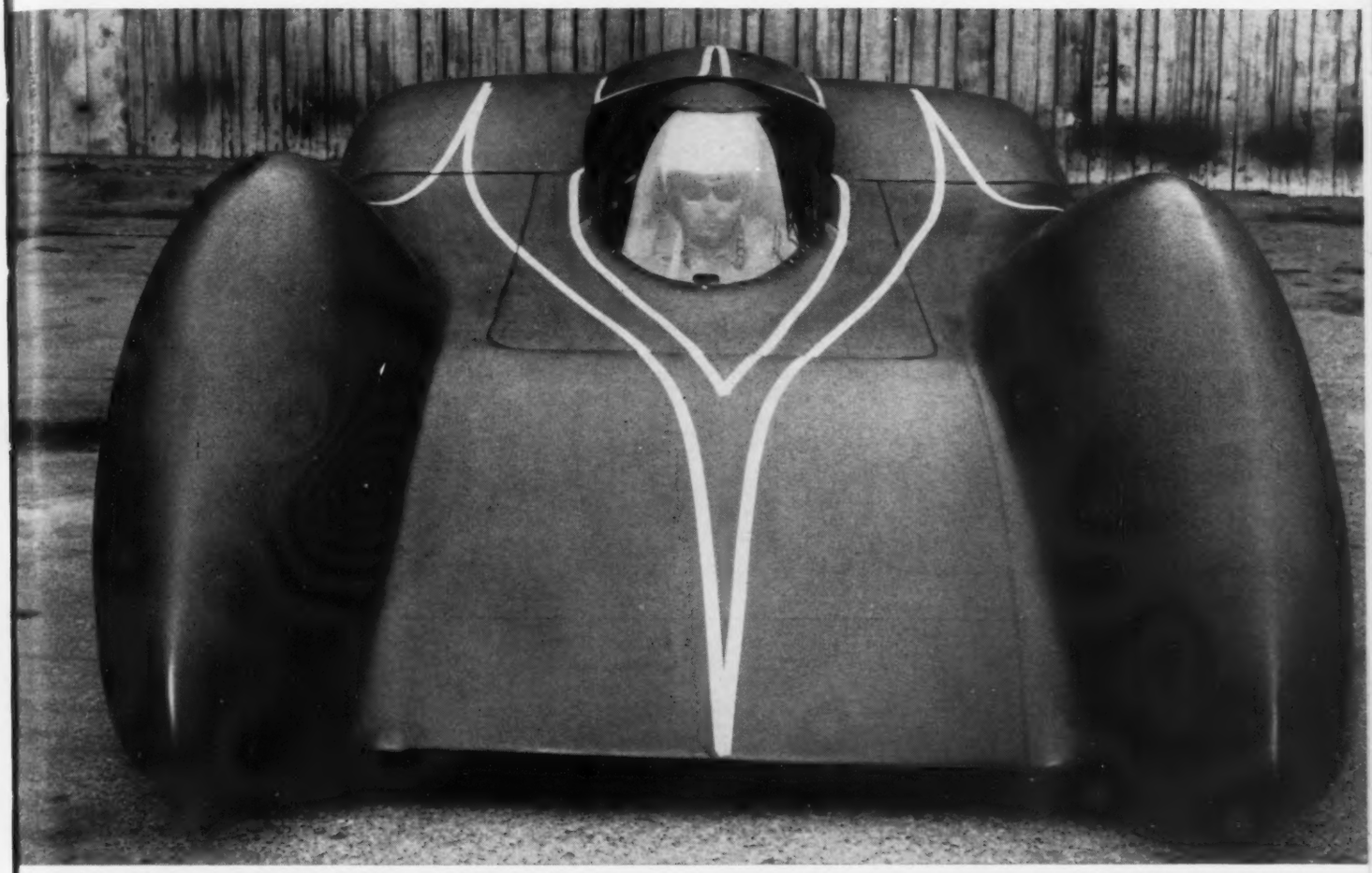
In researching the Porsche-designed Mercedes-Benz LSR machine which never ran, Jocko encountered the concept of clutch control which is entirely automatic and eliminates the human variable. With this concept in mind he spent a full six months studying varieties of clutch design and finally arrived at an original configuration consisting of 1½-inch steel flywheel, four Velvetouch-lined discs and three floating discs; other details are not for publication. As this clutch is designed to operate, the driver merely floors the throttle and lets the clutch pedal snap out. Instead of violent wheelspin, only that amount of power is fed to the wheels that can be transmitted efficiently to the pavement. The clutch slips up to about 130 mph, then locks up tight, the slippage being harmless. After the design was finalized Jocko called on me for verification of its workability. I put him in touch with Caltech engineers having race-car interests; they confirmed his intuition once again and added a few refinements. Then, and only then, Jocko went to work on the construction of the new machine. He will not be hurried. The project is financed entirely out of his own capital and a sign in his shop reads, "Don't bug me. The car will get built. If you can't wait, donate." And that silences the rail birds.

Also, Jocko sees no need for haste. Little enough is happening with top speeds and ET's are stagnant. But, he says, "Acceleration of two g's certainly is being achieved by some dragsters. If that can be sustained all the way down the strip, 281 mph in 6.40 seconds is possible in the quarter mile. It will take some horsepower."

This is exactly where Jocko is heading, and other authorities support his seemingly outlandish figures. At this writing his car is 95 percent complete. He has built the chassis, the unusual rear end and the far-out clutching mechanism. And the 8.35 Chrysler mill is in the frame and should do better.

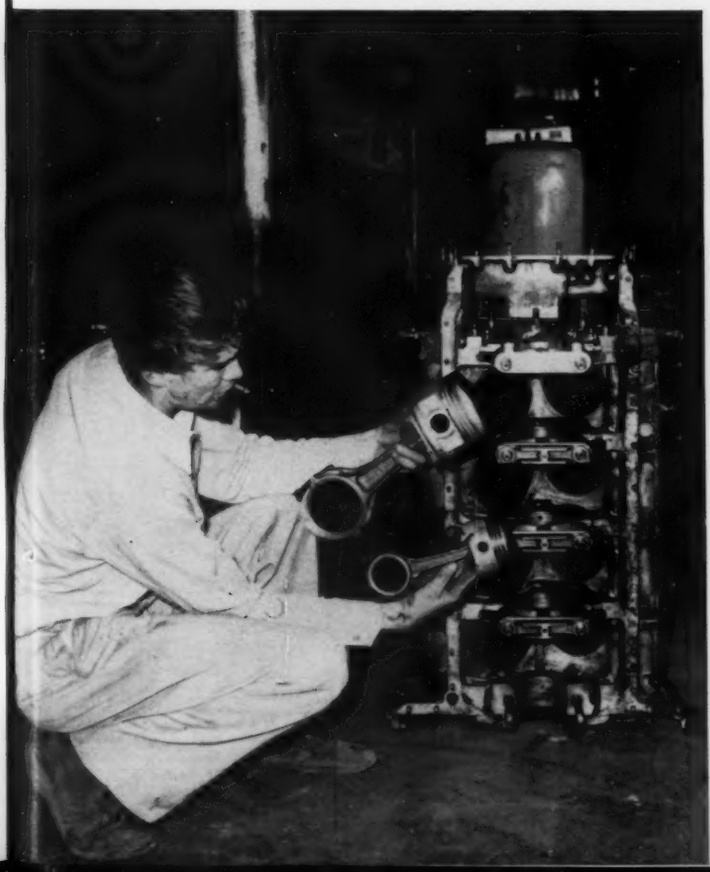
But this is only for shakedown runs. Standing by and ready to be dropped into the frame is a virtually all-aluminum Ford military tank engine. This dual overhead camshaft V8 is every ounce a racing thoroughbred, but on a grand and detuned scale. Bore and stroke are 5.4 by 6 inches, displacement is 1100 cubic inches. In stock tune it develops 500 bhp and 1050 pound-feet of torque at 2200 rpm. The block weighs 176 pounds and the total engine just 900 pounds. Jocko and his associate Bob Kelly—an expert in these Ford tank engines and their modification—are busily at work on conservative souping of the streamliner's tank engine.

About the time these lines are published Jocko will have emerged from over two years of great preparations for his second attack upon the absolute record for acceleration. He made history before, as a rank beginner. Dig him *now*. —*GB*

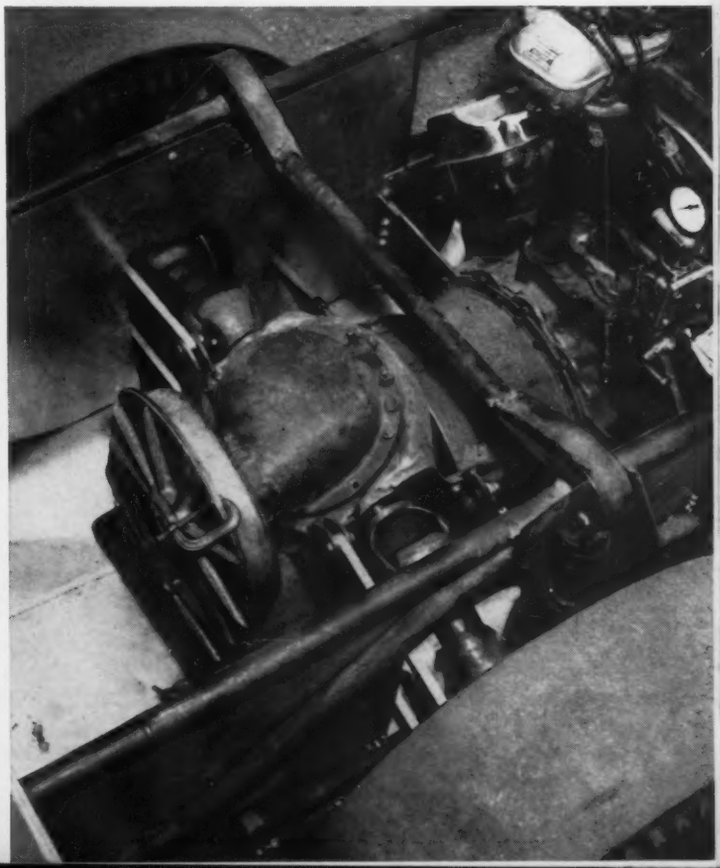


Yipes, there's a man inside! And he's not riding backwards as it might appear here. The streamliner's form received engineers' O.K.

For all-out drag efforts, Jocko, shown here, plans to use the overhead-cam Ford tank engine whose piston dwarfs Chrysler's.



The streamliner's secret weapon is the use of independent rear suspension and a clutch that controls slip for maximum traction.



PORSCHE CARRERA 2

The hottest car Porsche has ever offered to the sports car public provides riding comfort and speed for fast travelers.

● While at Reims for the French Grand Prix in midsummer CAR AND DRIVER had the opportunity to sample the latest in a long line of Porsche Carreras, the new 2-liter or 2000GS, just officially announced at the Frankfurt Automobile Show as the top car in the Porsche line. It is designed for touring but its performance is far from modest, as the accompanying graph shows. If you are able and willing to shell out the necessary funds you'll have yourself a hot-performing automobile, the fastest production Porsche yet.

1961 and 1962 models are here seen side-by-side, and readers will note larger rear window and double grille on the new car.

Only a limited number will be built; Porsche envisages an initial production of around 100 units.

The actual test car was experimentally fitted with Porsche's own disc brakes. These will not be found on the Carrera 2, discs once again being shelved by Porsche in favor of their reliable, efficient drum brakes. The Porsche discs stopped well but the lack of servo called for fairly high pedal pressures. Our test car's body did not have the minor modifications made to next year's car. Windshield and rear window are slightly larger; the front luggage compartment has been redesigned and thanks to a lower-lying fuel tank a full-sized bag will now slip under the hood. The tank is still the same size but the VW filler has been replaced by a Corvair-like cap concealed in the right fender. Fresh air is ducted in just below the windshield and hot air from the gasoline heater is controlled by a new dashboard-mounted console. Furthermore air conditioning is now available as an optional extra on all Porsches.

Acceleration of the 2-liter Porsche is most impressive. With the engine wound out in the gears, its sound beggars description. Mean, vibrant, harsh, the Carrera's moaning wail is unforgettable and tremendously exciting. We were able to thrash this Carrera over a network of French roads that included several fast straights as well as badly-surfaced secondary roads. The car is in its element on smooth, string-straight highways where sustained high-speed cruising is possible. Slow traffic can be overtaken in complete safety and ease while the car's compact size makes it perfect for dodging in and out of gaps. The wide torque spread of the 2-liter engine is probably its most outstanding feature and continual use of the gearbox just isn't necessary except when extracting the very utmost in performance through the gears. With the foot hard down in top gear at 2000 rpm, the 2-liter Carrera moves out rapidly and smoothly.

We were not favorably impressed with the car's tracking ability on rough roads, nor is the passenger's ride overly comfortable, but let it be said we were practically flat-out on a ripply surface, a fairly demanding situation. The car had a disturbing tendency to wander and extreme care was necessary in passing. The steering was on the heavy side.

As with all current Porsches handling is first-class, and the car can be flung around tight corners or drifted through fast bends with adequate power reserve. German Dunlop "SP" or the new Continental "Radial" belted tires will be standard, offering superb adhesion on wet and dry roads alike. Continental claims that with its new "Radial" tire, drivers will never have to look a snow tire in the face again.

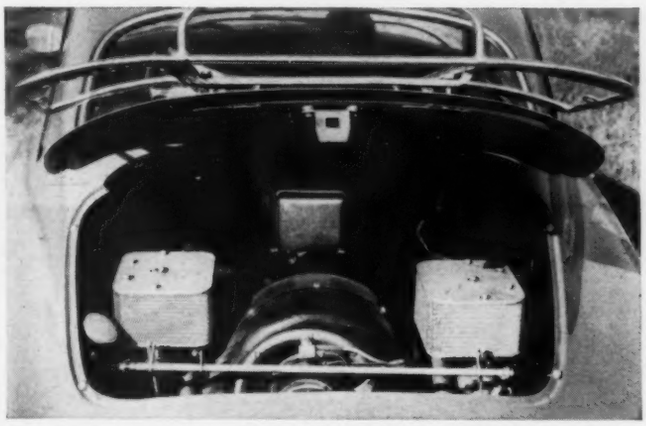
This new 2-liter engine incorporates the same basic layout as previous Carrera and Spyder engines but with the bore and stroke slightly enlarged. Pistons and plain-bearing crankshaft have been strengthened to cope with the additional stresses of the increase in displacement. She's slightly heavier and not quite an

The Porsche Carrera very gently but definitely understeers up to the breakaway point, with steering effort on the high side.

inch (24 mm) wider, while other dimensions remain the same. Dry-sump lubrication and twin ignition are continued. Servicing could be a problem in remote locations though access to the engine itself is good if one is familiar with the overall layout. A revised air intake setup is shown in the accompanying photographs.

1961 has not been the best year in Porsche's history. Delays in material delivery and more basic problems have forced the factory to postpone introduction of the eight-cylinder racing engine until 1962, when it is hoped they will have reached the target of 200 bhp. Assembly of Carrera engines may complicate this, for this year only a relative few have been built, fitted into the Abarth-bodied coupes — of which no more than a score have been made. Changed G.T. regulations for 1962 will mean that 100 of both chassis and body must have been built to qualify for homologation as a G.T. car. Up to now modifications to the body were tolerated as long as the chassis itself was in production of 100 or more. Next year, then, Porsche G.T. cars will be using production steel bodies with perhaps even a hotter version of this 2-liter engine.

At this point the Carrera 2 has been specifically aimed at those people desiring an exclusive sports G.T. car for fast touring; it's quiet and comfortable. With the revised ventilation and heating system the occupants will be able to travel in considerable comfort; reclining seats are still standard equipment and a set of fitted suitcases are among the available extras as is a sliding roof, electrically operated yet. The Carrera 2 will be available as a convertible or hardtop or as a "non-detachable" Karmann hardtop. —*JLA*

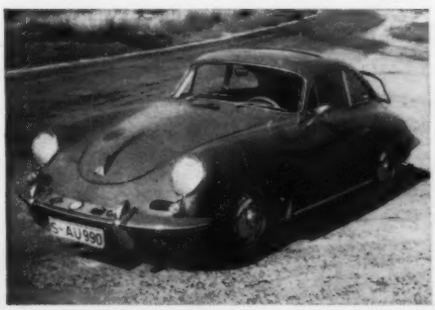


The 130 bhp 2-liter engine with its large wire-mesh air filters is built in the racing shop alongside the competition spyders.

The C/D road tester displays not only our smart new uniform but also the roomy trunk housing his bartender's equipment.

ROAD TEST: PORSCHE CARRERA 2

Price as tested: Not yet available
Importer:
Porsche of America, Inc.
527 Madison Ave.
New York 22, N.Y.



ENGINE:

Displacement	120 cu in, 1966 cc
Dimensions:	4-cyl, 3.62 in bore, 2.91 in stroke
Valve gear: Double overhead camshafts to each bank of cylinders	
Compression ratio	9.2 to one
Power (DIN)	130 bhp @ 6200 rpm
Torque	112 lb-ft @ 5000 rpm
Usable range of engine speeds	1800-7000 rpm
Corrected piston speed @ 6200 rpm	3365 fpm
Fuel recommended	Super premium
Mileage	15-22 mpg
Range on 14-gallon tank	220-300 miles

CHASSIS:

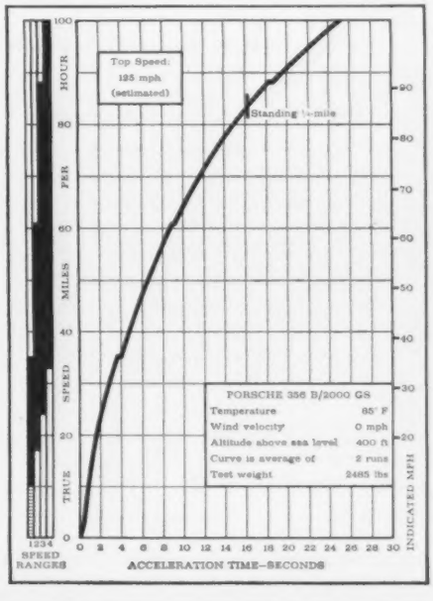
Wheelbase	82.7 in
Tread	F 51½ in, R 50 in
Length	158 in
Ground clearance	6 in
Suspension:	
F: ind., trailing arms, lam. torsion bars	
R: ind., swing axles and torsion bar	
Turns, lock to lock	3
Turning circle diameter between curbs	36 ft
Tire and rim size	165-15, 4.5 J x15
Pressures recommended:	
Normal: F 24, R 26 psi	
Fast touring: F 27, R 29 psi	
Brakes, type, swept area: 218 sq in, 11-in drums	
Curb weight (full tank)	2100 lbs
Percentage on driving wheels	58

DRIVE TRAIN:

Gear	Syn-chro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	3.56	——	15.79	4.6
1st	Yes	3.00	70%	13.29	5.6
2nd	Yes	1.77	44%	7.81	9.7
3rd	Yes	1.23	38%	5.44	14.0
4th	Yes	0.89	——	3.92	19.4
Final drive ratio				4.43 to one	

ACCELERATION:

Zero to	Seconds
30 mph	2.9
40 mph	4.7
50 mph	6.5
60 mph	8.7
70 mph	11.6
80 mph	15.0
90 mph	19.6
100 mph	25.1
Standing ¼ mile	16.3



• The tragic accident at Monza which cost the life of Wolfgang von Trips and fifteen spectators overshadows everything else now. Enzo Ferrari has gone into seclusion, the new World Champion, Phil Hill, is giving consideration to quitting racing and the Monza track has been closed until the official inquiry now being organized is over. Italian newspapers have had a field day, not to mention the rest of the world's press, the inaccuracy and sensationalism of which make one's stomach go sour.

Trips was a friend. He was leading the World Championship at the time of his death and died doing what he loved most, Grand Prix racing. We regret most of all the loss of innocent lives that went with him; no one is to blame for the accident, least of all Jimmy Clark, who was said to have triggered the incident. Blame for such an occurrence can hardly be pinned on one person, unless sheer recklessness can be proven. Clark was not being reckless. He was tigering—having a go—with the Ferrari phalanx leading the race and it was sheer bad luck that he and Trips touched ever so briefly as they prepared to brake for the Curva Parabolica on the second lap. We'll miss Trips. Phil Hill has won the Championship under less than perfect circumstances, yet this accident must never detract from Phil's terrific accomplishment—something he's been headed for since 1948.

Unofficial practice for the Grand Prix got under way at midweek with the B.R.M. team trying out its new V8 1.5-liter car. First of all it's the loveliest Formula 1 car to come along yet and it sounds great to boot. Nestled into the special chassis, it makes the Cooper-Climax and Lotus-Climax V8s for Brabham and Moss look like Rube Goldberg lash-ups. She's low and long; chief B.R.M. tester Graham Hill is more than just a little enthusiastic and the sooner they get rid of the four-cylinder Climax engines, the happier the B.R.M. team will be, so that development on the V8 can move ahead.

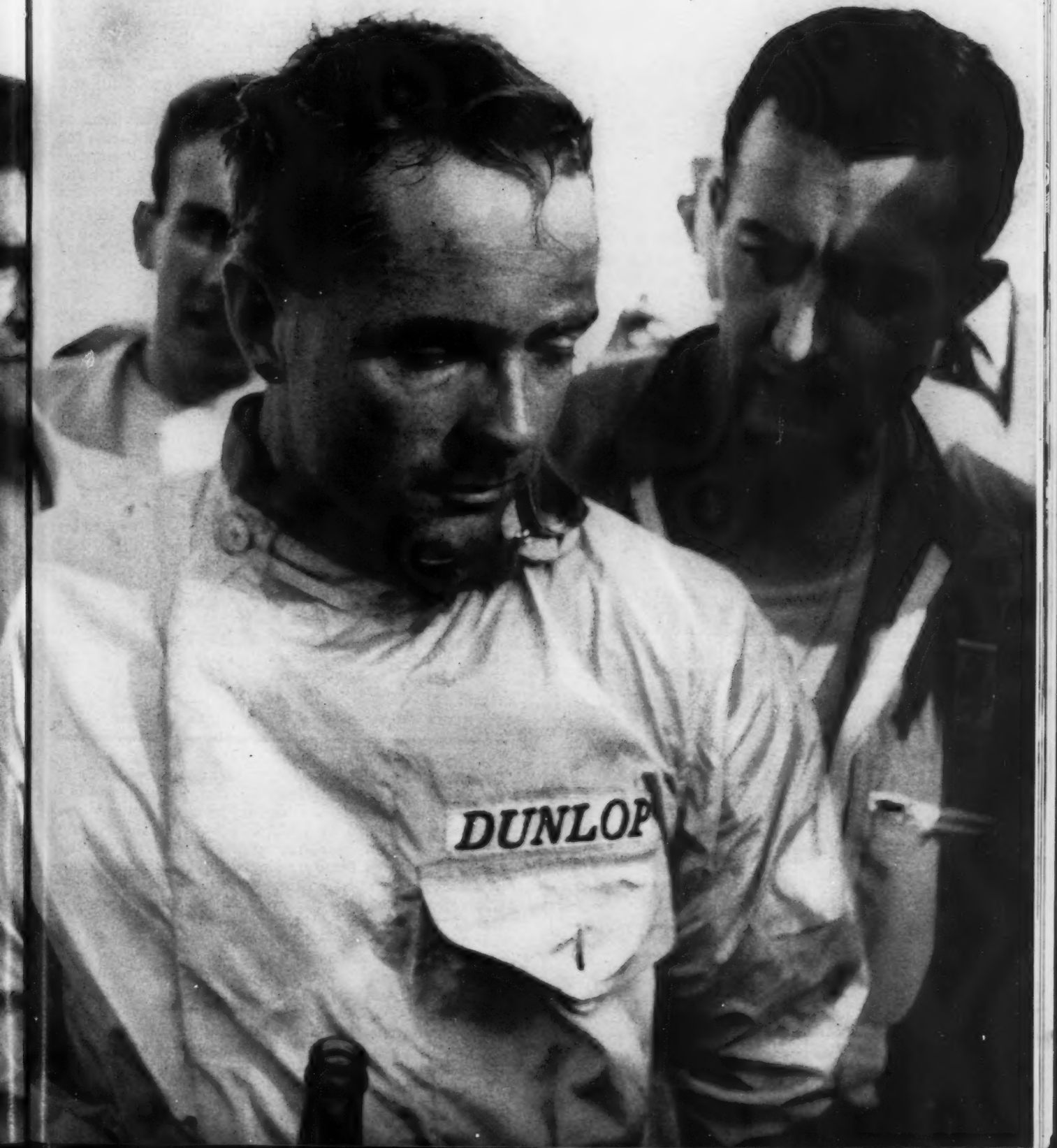
It's a 90-degree vee, utilizing Lucas low-pressure "spit and hope" fuel injection. Valve springs are coil and aside from this, few details of the engine are known. It revs to 10,000-plus and the red line on one of

Last year Phil Hill won his first G. P. at Monza; this year he won too, clinching the World Championship, but both contests were clouded—this one by tragedy on lap two. Jesse Alexander records this dark moment.

the practice cars sat ostentatiously at 10,500. Horsepower is more than they expected with about 185 already on tap. The whole car is slightly lighter than the four-cylinder machines used all season; suspension layouts are similar, but not identical. A five-speed gearbox is fitted; oil tank for the dry sump lubrication system is at the front. Four-wheel outboard disc brakes are standard.

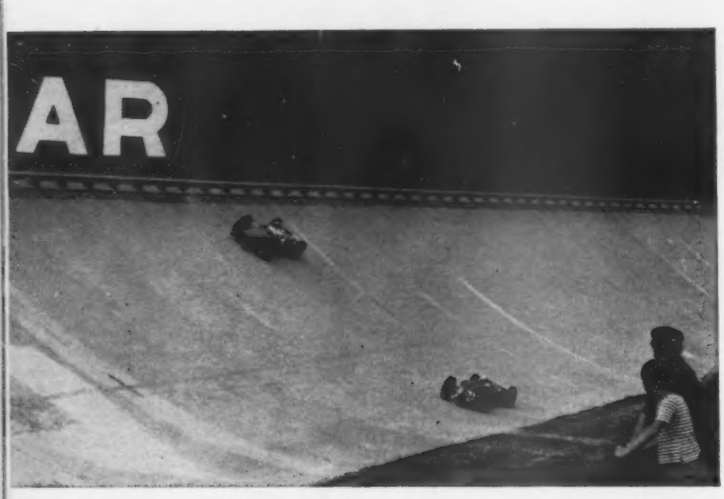
They had troubles—teething troubles—with the new B.R.M. in practice; first one engine broke completely when an already suspect part gave up the ghost as expected. The one remaining V8 (two had been hurriedly prepared for Monza) was shelved until the final official practice session when Graham Hill took it out to have a go at the hot Ferrari practice times; Graham had to sit on the sidelines for too long a time while a loose distributor was refitted. Then the bell mouths on the fuel injection intakes began to shake loose; all this was eventually put right, however, and Graham was able to

The Cheers Were Muffled



turn a 2:48.7 lap, fifth fastest and the best English time; in front of him on the grid were four Ferraris: front row: von Trips (2:46.3), Ricardo Rodriguez (2:46.4); second row, Richie Ginther (2:46.8) and Phil Hill (2:47.2). But a last-minute decision saw both B.R.M. drivers in four-cylinder Climax-powered cars in the race. With only one V8 left, and it not running perfectly Berthon and Mays, the B.R.M. bosses, decided to save the new power unit for further testing.

Von Trips pulls into the Ferrari pits for the last time after setting fastest practice lap for the race that took his life.



The steep Monza banking was no obstacle to near-record speeds. Ginther zooms his Ferrari high over Surtees in a Yeoman Cooper.

The new B.R.M. V8 looked very good in practice, appearing to be one to watch in 1962, but it didn't actually compete in the G.P.

Climax was able to deliver a second V8 engine to Stirling Moss by the end of August. It was squeezed into a four-cylinder chassis and the result was the ugliest looking Formula 1 car of the season. It never was running right during practice and most of the time was spent trying to figure out where and how it was losing all its water, which seemed to be blowing out around the radiator cap. Neither Brabham nor Moss could keep the temperature down and Moss found himself short on revs. In the end, Brabham elected to use the Climax V8 in the race while Moss gave up in disgust and borrowed a latest-type Team Lotus four-cylinder. With this bolide he and Dan Gurney had a neck-and-neck, wheel-to-wheel exchange for more than half the race until a wheel bearing on Moss's Lotus packed up and he retired.

Brabham eventually retired after only ten laps of battle; he said after the race that if it had not been for the solid Ferrari formation ahead of him on the opening laps he would have been able to make a real bid for the lead, knowing all the time, however, that his engine would undoubtedly not last long since the loss of water problem was still unsolved when the car was pushed onto the starting grid. For the 1962 season both Cooper and Lotus will have come up with new chassis for the Climax V8 and the cars will certainly be giving better accounts of themselves.

The B.R.M. four-cylinders did not distinguish themselves. Graham's engine gave up the ghost while Tony

ITALIAN GRAND PRIX

September 10, 1961, Monza

43 laps, 6.21 miles per lap

1	P. Hill	Ferrari	2:03:12 (130 mph)
2	Gurney	Porsche	2:03:44.2
3	McLaren	Cooper-Climax	2:05:41.4
4	Lewis	Cooper-Climax	2:05:53.4
5	Brooks	B.R.M.	2:05:53.5
6	Salvadori	Cooper-Climax	2:04:54.8
7	deBeaufort	Porsche	2 laps behind
8	Bandini	Cooper-Maserati	
9	Trintignant	Cooper-Maserati	
10	Parnell	Lotus-Climax	
11	Taylor	Lotus-Climax	
12	Pirocchi	Cooper-Maserati	

Fastest Lap: Baghetti, Ferrari, 2:48.4, 132.4 mph

Brooks finished in fifth position just nosed out by Jack Lewis. Brooks got himself into hot water with the organizers earlier in the week when he did not stop when they asked him to and tempers were at the boiling point more than once during the latter half of the Monza week. The usual hassles with police and Italian organizers did not help things and the driver's association formally decided to award a trophy to the organizer of the best race of the year.

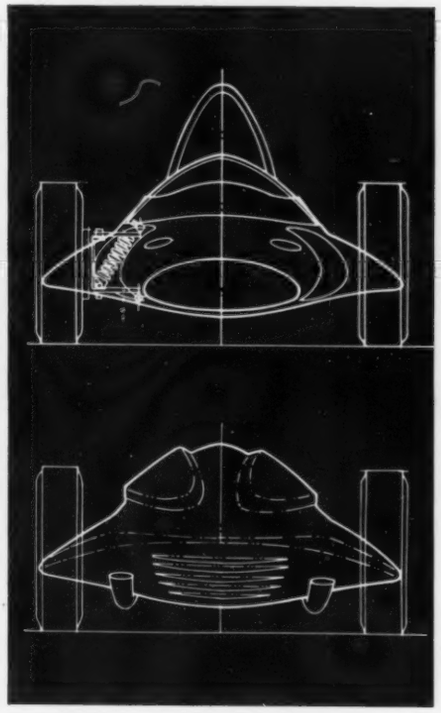
Porsche came to Monza with four cars, one of which was the latest chassis sporting wishbone front suspension. Joe Bonnier tried this car out on the combined road and banked circuit and found the older conventional Porsche RS system more to his liking. Dan Gurney did marvelous things with his Porsche at Monza, finally ending up second overall after his battle with Moss. Gurney could usually *(Continued on page 79)*

WEAVER CONTEST WINNERS!

• The C/D staff literally burned the midnight oil judging winners from among the hundreds of entries received for the Body Design Contest for the Weaver 1500. Announced in our May issue, the contest called for original styling and technical innovations to be eligible for top prizes.

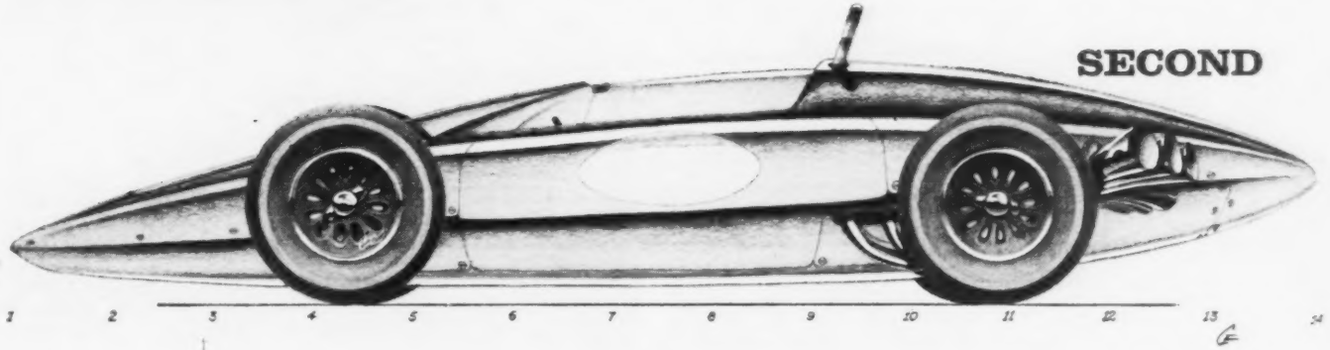
Here we present the three over-all winners and the ten entries receiving honorable mention. To Richard K. Althans of 11 West Division Street, Chicago, Illinois goes the grand prize, a Scalextric G.P. 3-model racing set valued at $57.90. Gaylord E. Eckles of Whiteman AFB, Missouri, claims second, a G.P. 2 set valued at $52.90 while to Jerry Knoll of 6815 Oleander Ave., Chicago, Illinois goes third, a G.P. 1 set valued at $47.90. All of the Scalextric prizes come through the courtesy of Polk's Model-Craft Hobbies of New York City. The ten runners-up each receive one-year subscriptions to Car and Driver.

Briggs Weaver, you'll recall, designed a chassis and engine for a proposed 1500 cc Formula 1 car. Readers were invited to finish off the plans. The response was almost overwhelming and the enthusiasm great. So great, in fact, that we feel encouraged to follow this up at a later date with a Grand Touring body design contest. Sound interesting?

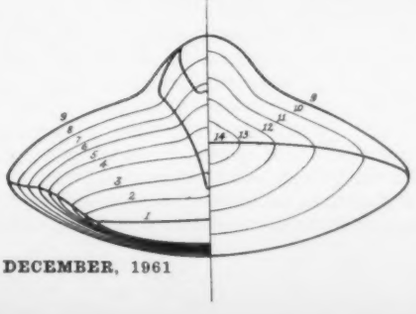


FIRST

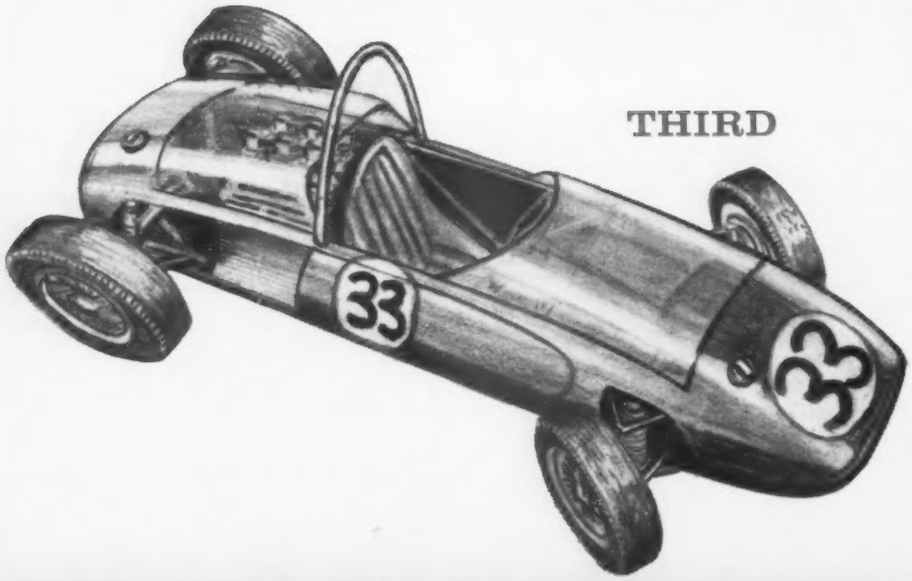
The over-all winner! Scoring heavily on both esthetic and technical grounds, the Car and Driver staff felt Richard Althans' design best expressed a trend cars of the future may (and probably will) follow. Styling is not accomplished at the cost of sound design. The steering column is lowered and a smaller wheel is used. The canted radiator allows a slim nose section. Horizontally-mounted tanks aid stability.



SECOND

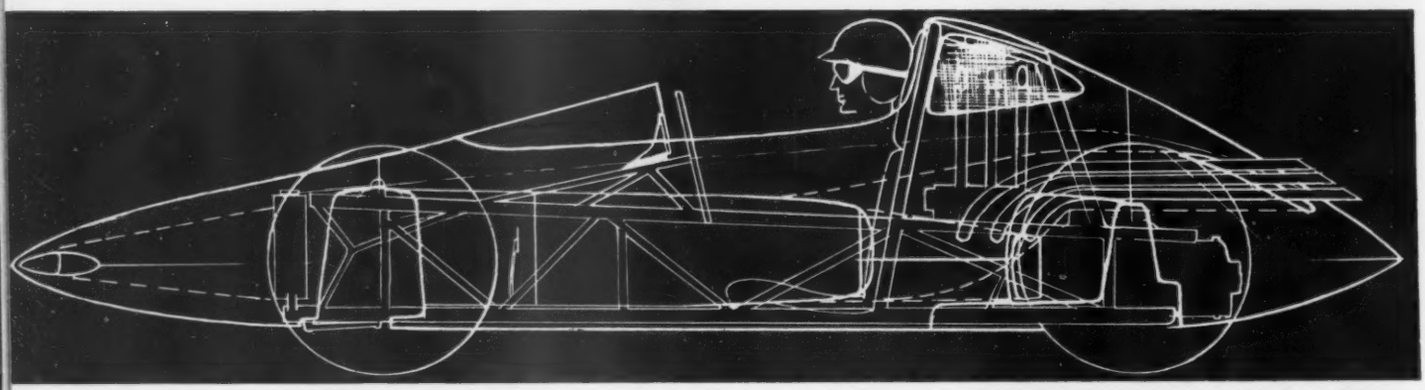


Gaylord E. Eckles of the 340th A&E Squadron, Whiteman Air Force Base, Missouri, turned in a super-smooth design that went all-out to reduce air drag to a minimum. This result is obtained by the use of sophisticated lines which can be appreciated by comparison of the pencil profile drawing and the cross-sections just below it. In his search for a wind-cheating shape Eckles has brought the windshield almost out to the very nose of the car. This should reduce turbulence over the cockpit cutout making it possible to draw air through the same opening. The designer admits that the long nose and tail necessary to achieve good penetration might be awkward on short courses.

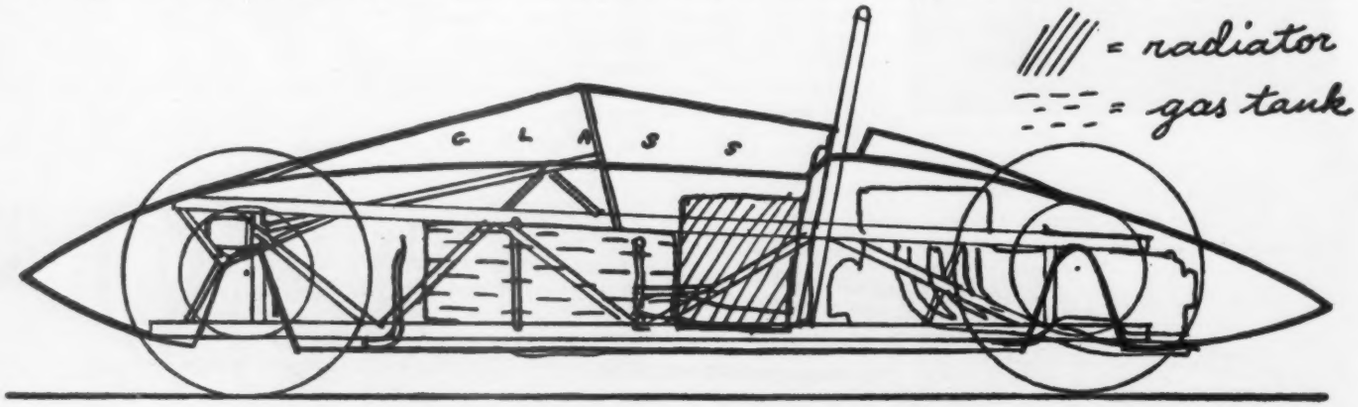


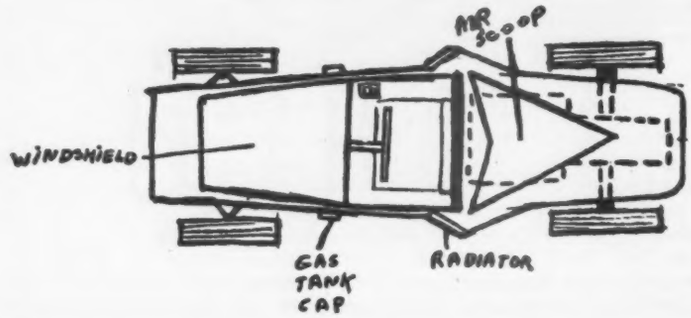
THIRD

Dubbed the "Fishbowl Weaver" by designer Jerry Knoll, due to the imaginative use of plexiglass as an engine cover and as a front body panel, the third-place winner impressed by its straightforward appearance allied to technical novelties. The location of the radiator behind the engine permits an unbroken nose shape, and the housing of a small gas tank up front. For longer races cartridge-type fuel tanks could be slipped into the cut-outs in the body sides. For fast pit stops the empty fuel cells could be whipped off and prefilled cartridges, with rubber seals, could be quickly slipped on. Instrumentation is also interesting. The panel is set just below the joint of the plexiglass and aluminum up front, theory being that the driver shouldn't have to refocus his eyes to check dials set up close to him in the cockpit. A combination of little things, such as this, can work with a driver to appreciably cut down his lap times.

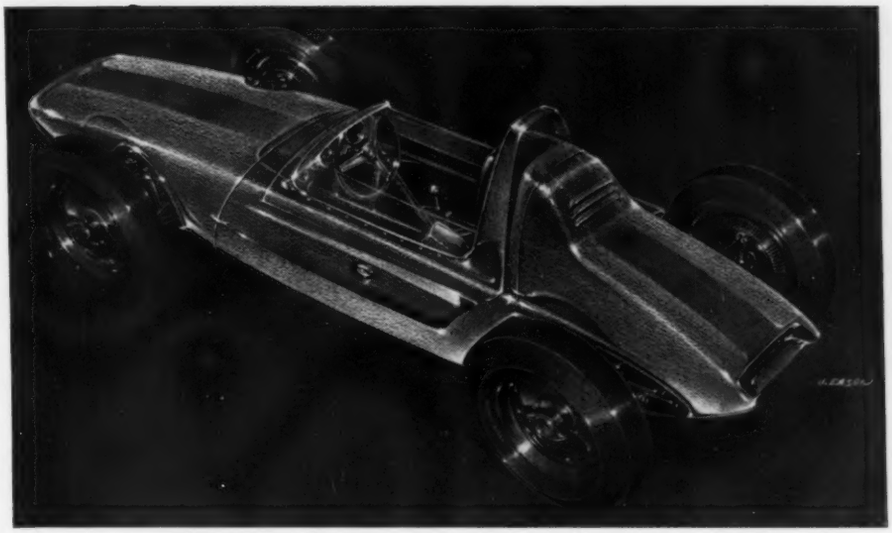


Stanley Waechter, of 857 Tyrone, Pontiac, Michigan provided a lower, thicker radiator to permit a flatter nose and faired the roll bar into the body. Dart-shaped, his body allows a controlled air flow over the four basic body sections which feature quick-removal fasteners. The treatment of the side air intake gives styling interest and the carburetor intakes and exhaust are neat. The former takes the form of flush-mounted screens while the tailpipes are tuned for optimum performance. The driver sits low inside the shell, well protected from the elements but not buried so that ability to "place" the car on the road is cut. Over-all, the design gives the impression of being fleet and light. It's distinctive without resorting to useless gimmickry.



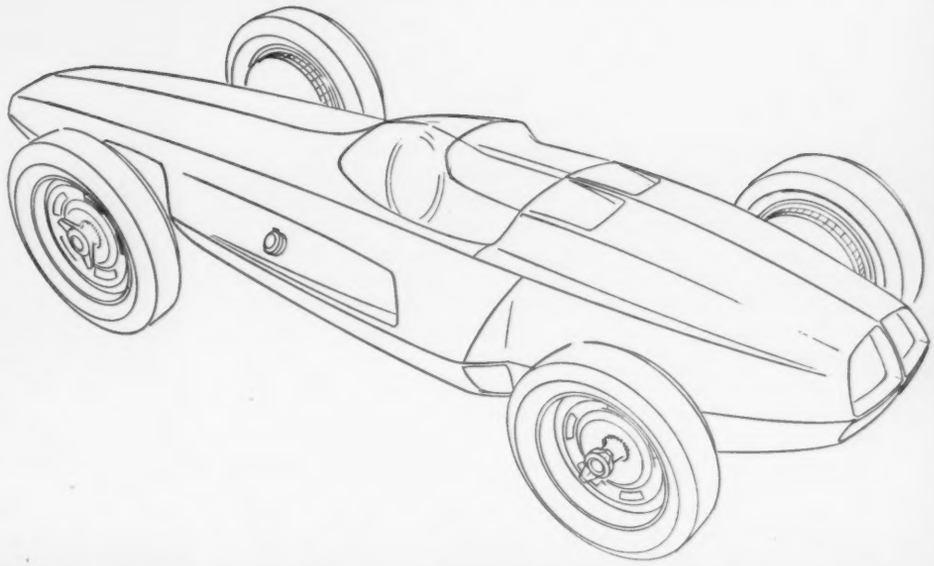


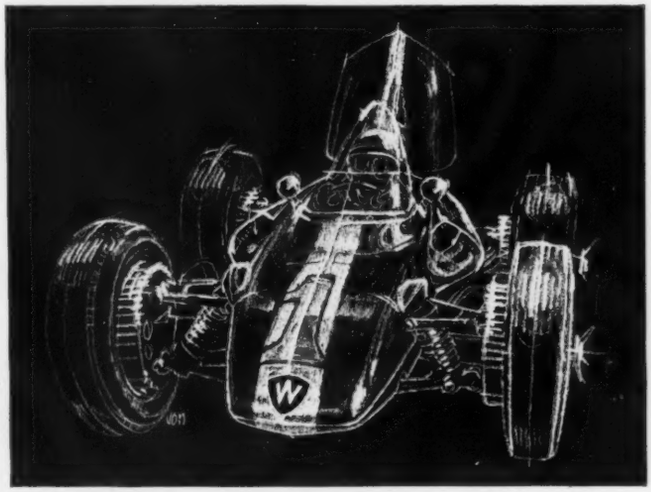
Not all entries were "works of art". This one by John Theisen scored heavily on technical grounds. His drawing gives a clue to the aerodynamic shape, and the "birdcage" type windshield adds visibility without adding mass. Careful attention has been given to ducting for cooling and exhausting hot air. Short water lines run to the side-mounted radiators which, like the side-mounted fuel tanks, help keep balance under all conditions. John, whose address is R.D. 1, Brockport, Pennsylvania, has a clean, almost simple design, totally devoid of frills. Everything there has a purpose and, we would judge, a useful, workable purpose. Our directions were explicit when they said that "we only need enough to understand the shape and purpose of your body design." Not all good engineers are artists and vice versa.



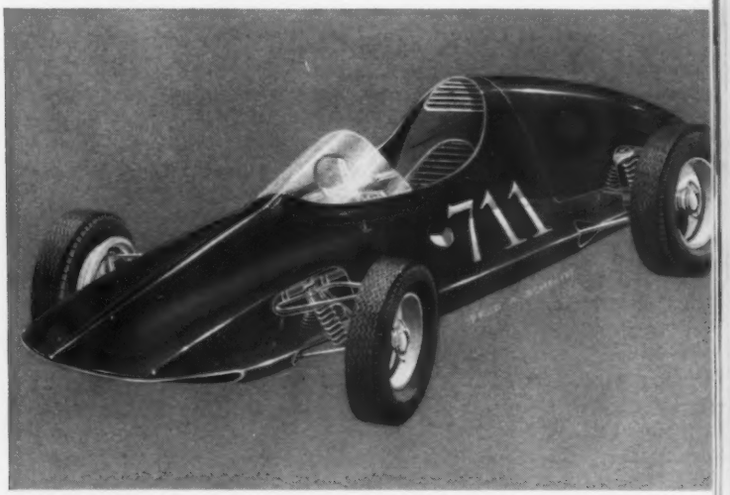
John E. Eason, of 23058 Gary Lane, Saint Clair Shores, Michigan earned a Car and Driver subscription for his entry. Among its features are an aerodynamic roll bar which completely encircles the cockpit, being welded to frame tubes. Side-mounted fuel tanks with two filler caps are used. To minimize frontal area, the size of the main radiator is reduced with supplementary cooling coming from two side-mounted units just ahead of the front wheels. A headrest built onto the carburetor cover gives the design distinction and adds safety and comfort. The knock-off disc wheels are made of magnesium to reduce the unsprung weight and are slotted for cooling. Other subscription winners, whose entries are not shown, are: W. C. Hannan, of 6245 Craner, North Hollywood, California; Dean C. Ing, 5648 Hazel, Orangevale, California and Richard Ruzzin, 37285 25-Mile Road, New Baltimore, Michigan.

Phillip Campbell, of Port Clinton, Ohio, entered a design that scored high on its over-all appearance. With its crisp angularity the Campbell machine is modern enough to please the most avant-garde styling studio. Mechanical layout retains the Weaver positioning of all components, except for tilting of the radiator. Fuel is carried in bulges on either side of the body, with possibly more tankage available slightly inboard from the external tanks. Beside the normal air entry in the nose there are two recessed scoops in the rear decking to provide cool air to the carbs, while ventilation for the driver is handled by two intakes just ahead of the fuel blisters. These vents could also be used to provide additional cooling air to the engine compartment. A good point in this design is the use of a wide cockpit cutout faired in by a plexiglass windshield that is almost a coupe top. This provides a useful amount of room for the driver.





Runner-up Jon Dahlstrom's Predator combined an interesting shape with some technical nuggets such as an air brake that utilized the rear body panels. Careful attention was paid to streamlining with a fully-enclosed nose and side-mounted radiators. The air ducts at the side feature split intakes (a la jet-plane practice) to provide for both cooling air and engine air with only one opening in the body. Sealing the body around the suspension members has also been very carefully done for two reasons: to cut down drag, and to maintain a smooth air flow.



Very low frontal proportions and a neatly integrated engine cover/headrest/carburetor air intake set the styling theme for the entry of Fred A. Schmitt, of 29C Lowry Court, Clifton, New Jersey. Among the unusual features are radiator opening that's nearly horizontal on the front leading edge of the car. The entire rear body section (he specifies aluminum for its construction) removes for good access to the engine and the transmission. Air for the carbs enters the screened opening in the headrest and hot air exhaust provisions are adequate.

MONZA SPRINT

Blown Corvair engine and modifications to rear suspension and steering make the Monza Sprint a very attractive car for the non-racing motor enthusiast.

• Most people who buy sports cars do so with no intention of racing them and often, for a number of reasons that need no explanation to enthusiasts, become disenchanted with their choice and begin to look around for a car that will carry four people and their luggage yet retain a certain amount of distinction, satisfactory performance and comfort. This explains the soaring popularity of the Grand Touring car with which European and American manufacturers alike have found a fertile seller's market.

The sales success of the Corvair Monza 900 is a prime example of this, but being a car fancier is a disconcerting business. It seems that no matter what you have you inevitably want "a little bit more" whether it be power, comfort or styling extras.

Racing driver John Fitch has recognized all this and is offering for sale his concept of the American G.T. Based on the Corvair, he calls it the Monza Sprint. Our day with it at Lime Rock and bombing around back roads shows he's got the right idea.

The prescription is a simple but effective remedy for curing enthusiasts' wants. John takes the basic Monza (he's presently offering only white ones with black interiors to give the Sprint "identity") and dolls up the bow with a chrome-plated wire-mesh screen running its full width. Serving as a pebble guard for the headlights, it gives spice to the otherwise uninteresting front end. He transforms the roof line by adding a black textured material to give it the appearance of a padded top. A chrome bow at the rear window's top edge results in a modified notch effect and the rear window is partially masked both for appearance and to cut down on interior glare from headlights of following cars. The capping touch is two dark metallic blue stripes running the length of the car on top of the fenders. The result is distinction without gaudiness; it's tasteful customizing and does improve the looks.

The driver's view must appeal to every enthusiast. The wood-rimmed aluminum steering wheel is dished for maximum safety.

To make sure the car will go as well as it looks, John offers a power kit on the 98 bhp factory optional engine. In the case of the car we tested it was a Paxton blower giving a modest 4 psi boost and dual exhausts providing a pleasant burble in keeping with the restrained changes of the rest of the car.

Handling is improved compared to the stock Monza through use of special rear coil springs which result in 2 degrees of negative camber and a higher spring rate. Coupled with different shock absorbers, the net result is a better-behaved rear end well-suited to fast driving over virtually any surface with comfort and a good feel. On the track, using speeds much higher than those we ever encountered on the road, the ultimate oversteer of the Corvair was evident, yet with 130 bhp available all that was needed was a flick of the wood-rimmed steering wheel and a steady hard foot on the accelerator to straighten things out. Since Fitch's concept was for a strict touring car (not one designed for G.T. or compact car racing) the changes have all been designed to improve performance without sacrificing tractability. Our lap times at Lime Rock probably could have been improved with adjusted air pressures in the tires (we used the recommended touring pressures on purpose) and a track-designed tire. In even the hardest cornering situations, the rear wheels remained pretty nearly vertical although there was quite a bit of tire deformation.

Thanks to effective decambering, cornering power of the Monza Sprint was quite high, even without the front sway bar fitted.

The blown engine was not at its best until 3000 was registered on the tachometer, with full-throttle use below that figure resulting in a stumbling or a dying feeling under the gas pedal. Over that, the faster the car went, the faster it seemed to want to go as boost climbed. John says 5000 to 5500 rpm is a satisfactory top rev limit for most uses but we found 5800 could be used and acceleration times improved when we did. In starting, the engine made a few revolutions before it burst into life and when the engine got really hot the idle became lumpy.

The Monza Sprint prototype represents a good car made better and more desirable. However, for production models, John said he has decided to scratch the

John Fitch demonstrates how the stone guard which is hinged at the bottom gives easy access to the baggage compartment lock.

supercharger in favor of a four-carburetor manifold which should give equal performance at a lower price while also improving tractability. In addition, a longer pitman arm will be installed on future models to speed up the steering and a front anti-roll bar will be standard to improve rear-end behavior. The four-carb manifold and its performance are described in Wayne Thoms's story, "Modified Monza" in the November C/D.

A few goodies in addition to the tachometer and wood-rimmed steering wheel are found in the interior and others are planned. At present all Sprints will come with a Helphos windshield-mounted spotlight, a compass and a radio. Still in the talking stage are headrests and reclining seats. If you cannot recognize the Sprint by its distinctive interior and trimmings, it's spelled out for you on the hood and dashboard in chrome letters.

John says immediate plans are to sell complete cars through selected Chevrolet dealers covering the entire country. Remember, the Monza Sprint will come equipped with the four-carb engine rather than the blown version we tested. The retail price includes a suspension conversion, quick steering, special steering wheel, Radson tachometer, front stone guard, windshield washer, striping, compass, Indicaps (valve caps registering loss of pressure), dual muffler, padded dash, grab rail and the convenience group of accessories. The first series of cars will be built by Dutchess Motors of Millerton, New York and questions regarding local delivery should be addressed to the manufacturer.

If there is sufficient demand, Fitch says complete Sprint conversion kits and individual components may be offered for sale. However there is no such arrangement at this time since attention is being given to preparing the completed cars. Our photos are of the prototype which was a 1961 model. All subsequent cars will be '62s.

For a price just under $3000 the Sprint offers performance and comfort normally associated with cars costing twice that. The basic Monza lends itself well to the thoughtful modifications John Fitch has devised. We feel a good number of driving enthusiasts will agree with us. —*C/D*

ROAD TEST
CORVAIR MONZA SPRINT

Price as tested: $3295 ($2995 with four carbs)
Manufacturer:
John Fitch & Co.
Lime Rock, Conn.

ENGINE:

Displacement	145 cu in, 2372 cc
Dimensions	6 cyl, 3.44 in bore, 2.60 in stroke
Valve gear: Narrow-angle pushrod-actuated overhead valves	
Compression ratio	8.0 to one
Power (SAE)	130 bhp @ 5000 rpm
Torque	185 lb-ft @ 4000 rpm
Usable range of engine speeds	3000-5500 rpm
Corrected piston speed @ 5000 rpm	2470 fpm
Fuel recommended	Premium
Mileage	15-22 mpg
Range on 14-gallon tank	210-300 miles

CHASSIS:

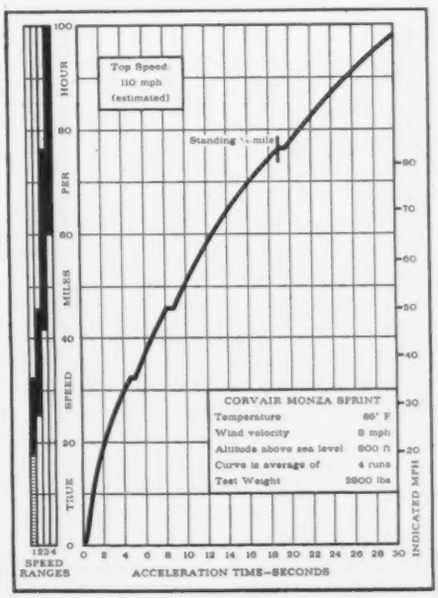
Wheelbase	108 in
Tread	54 in
Length	180 in
Ground clearance	5½ in
Suspension:	
F: Ind., wishbones and coil springs	
R: Ind., swing axles, trailing wishbones and coil springs	
Turns, lock to lock	2½
Turning circle diameter, between curbs	42 ft
Tire and rim size	6.50x13, 13x5K
Pressures recommended:	
Normal F 16 R 26 psi	
High-speed F 20 R 30 psi	
Brakes, type, swept area: 9-in drums, 198 sq in	
Curb weight (full tank)	2550 lbs
Percentage on the driving wheels	62

DRIVE TRAIN:

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	3.66	—	13.15	—5.3
1st	Yes	3.65	57%	12.98	5.4
2nd	Yes	2.35	63%	8.34	8.3
3rd	Yes	1.44	44%	5.12	13.6
4th	Yes	1.00	—	3.55	19.8
Final drive ratio				3.55 to one	

ACCELERATION:

Zero to	Seconds
30 mph	4.1
40 mph	6.6
50 mph	9.8
60 mph	12.6
70 mph	16.2
80 mph	21.0
90 mph	25.2
Standing ¼-mile	18.9



START THE '62 SEASON WITH A PSYCHOLOGICAL ADVANTAGE! WITH THIS TRANSPORTER YOU CAN COMPLETELY SHATTER THE OPPOSITION!!

by **ROBERT LEE BEHME**

● As unique as it is useful, this sports car carrier may solve all of your problems. If you know a sports car owner who has everything—fame, fortune *and* a Ferrari—here is the answer, the ideal Christmas gift: a customized car carrier that can beat an MG off the stop light and corner with a Porsche.

Shortly after the close of World War II, a small, wiry, explosive midget driver fought his way to second place for two years among USAC-rated West Coast pros. Although 30 when he started, racing experts predicted a great future for Norman Holtkamp. The next year Holtkamp stopped racing, switching from driving to mechanics. The experts were still right: Holtkamp became one of the West Coast's top tuners. He was on Agajanian's crew when Troy Ruttman won the Indy 500 with Aggie's car. Later he became a top sports car handler.

Not too long ago, Stuttgart buzzed with the news of Mercedes's special-built carrier, a machine capable of 103 mph with a Grand Prix machine on its back. The news brought alive an idea of Holtkamp's. The result, after nine months of work, is this sleek, modern transporter, capable of carrying a ton of racing machinery at speeds over 112 mph.

Although the $16,000 price tag may seem a trifle steep to weekend racing enthusiasts, Holtkamp has aimed the truck toward professionals and expects to sell four or five a year. He is absolutely right when he says, "For the serious racer, this is the only way to go."

Holtkamp built the prototype chassis from a Mercedes 300S sedan, cutting 20 inches from the center of the chassis, welding the joints with gussets and plates. Front and rear axles, differential, spindles and running gear are stock Mercedes.

Suspension, front and rear, is by torsion bars. In the rear, Holtkamp has retained the standard Mercedes electric load-leveling bars. Up front he installed Porsche torsion bars, mounted transversely. These are adjusted manually.

The two runways, which cradle and support the race

★★★★★★★★★★★★★

ACT NOW!

WE'VE SLASHED PRICES TO BRING YOU THIS CHRISTMAS SPECIAL!

was ~~$16,000~~

now only $15,999.95!!

Buy 2 and save even more

★★★★★★★★★★★★★

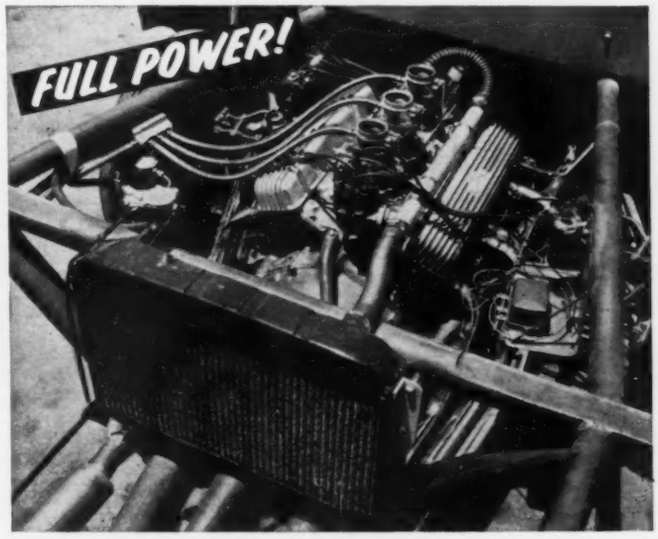
The two bubble-shaped fuel tanks hold 48 gallons for extended high-speed cruising. For ballast, the flat tank is water-filled.

car, are mounted to the chassis by a series of 2 and 3-inch diameter, 0.090" thick, 4130 CM tubes. These are strengthened by a space-frame design which runs from the rear of the cab to the rear bumper. The superstructure, at the nose of the El Camino cab, and aft of the cab around the runways to the tail, is shaped of ¾-inch thin-wall tubes, covered with hand-shaped panels of 6061, ½-inch thick, hardened aluminum. The 10 panels were rolled and shaped by Troutman and Barnes, famed Los Angeles builders, and finished by Holtkamp. All panels, including the two-section full belly pan, can be removed in less than 7 minutes.

The 1957 Corvette engine, a hopped-up 300-inch unit capable of more than 300 bhp (modified by Pee Wee Gallant) is mounted ahead of the runways, behind the cab. The Corvette mill is coupled to the Mercedes rear end by a special drive line. The front section of the line is pure Chevrolet; the rear section is stock Mercedes.

A three-speed Corvette transmission was fitted to the engine, coupled to a 1960 Chevrolet truck clutch (hydraulic). Shifting linkage is made up of flexible cable and Heim fittings, mounted inside copper tubing for greater rigidity.

Fuel capacity of the carrier is 48 gallons, enough for a several-hundred-mile run. The fuel is carried in two outboard tanks, just aft of the rear wheels. Holtkamp has mounted a 36-gallon water tank forward of the fuel tanks, to act as ballast when the carrier is empty. The additional weight—some 300 pounds of water—



Fully-loaded, Holtkamp's carrier is capable of 112 mph. The '57 Corvette engine is behind the cab, uses a rear-mounted radiator.

gives the rear-wheel weight needed during braking.

Steering linkage, which leads aft rather than forward as it does on a stock Chevy, has been adapted from four forged U-joints, tubing and a B-25 bevel-gear flap control box. The gearbox is mounted beneath the cab. Two U-joints and a short section of tubing connect the steering wheel with the gearbox. Two more U-joints and tubing connect the box to the standard Mercedes circulating-ball gearbox. Steering is amazingly quick and sure.

Production versions will be built on a full El Camino wheelbase (approximately 120 inches), with standard Chevy parts replacing the Mercedes sections. Dual wheels will be used on carriers designed for loads of one ton or more. The carrier in that form will be able to be serviced and repaired at Chevy dealers across the country—providing they don't faint from surprise first!

An easily-removable nose section smooths the contours of the El Camino-derived cab, setting the styling theme for the transport.

★★★★★★★★★★★★★★

EASY, CONVENIENT TERMS!

Buy now, pay now

★★★★★★★★★★★★★★

Because it is self-contained it travels at automotive highway speeds (in California the auto limit is 65 mph while truck and trailer speed limit is 50 mph). The machine can cruise all day at 85 mph, yet handles like a VW minibus. Steering action, in fact, is surprisingly close to the VW. Ride, springing and handling are closely equated to the Minibus. Even a panic stop gives less nose dip than you find on American cars.

At $16,000 such features make the carrier a real bargain. Since Holtkamp will build only four or five a year you can be certain you'll be first boy on your block to own one. You can place your order with Norman Holtkamp, 9332 Vista Del Mar, Playa Del Rey, California. A check or money order will be o.k. but please—no stamps. Order yours today, avoid the rush!

***wsw, backup lite and racing car opt. xtra*

Reworked Porsche taillights finish off the rear end. The race car is driven on by ramps, but power winches will be installed.

A million dollars and an ego to match provided prewar U.S. track racing with its most colorful era during. . .

The Madcap Years of Joel Wolfe Thorne

by **BROCK YATES**

• Plenty of rich boys have come and gone in motor racing. There was Cliff Durant and Whitney Straight, Briggs Cunningham and now Lance Reventlow. And over in the corner there, gangling in a dingy leather jacket and tennis shoes is Joe, better known to his patrician relatives and uncounted court bailiffs as Joel Wolfe Thorne, Jr.

Where men like Cunningham and Reventlow have carefully metered their flow of funds in behalf of their sporting objectives, Joe used the firehose technique, sloshing money around in appalling sums, gathering in its wake sports cars, whole racing teams, speedboats, airplanes and dazzling women. In twenty hectic years Joel Wolfe Thorne, Jr. probably spent more, outraged more, upset more and amused more than any other man in racing history.

When things were going right, it was not uncommon for Joe to pull off an expensive sport coat and present it to its first admirer. But when his accounts were overdrawn he lived like a bum, operating out of such unlikely hostelries as the coal bin of an Indianapolis hotel, subsisting from occasional bags of groceries dropped off by friends.

Never a disciple of Dale Carnegie, he left dozens of associates gnashing their teeth in rage and frustration. E.g.: Shortly after the war he borrowed $1,000 from a wealthy car owner. A few months later they quarreled and the owner demanded his money back. Joe waited until he was on the brink of arrest, then paid off with a giant bagful of pennies!

If Joe possessed traits of character other than those normally associated with young millionaires, it might be said that he came by them honestly. His father, Joel Senior, sole heir to the massive fortune of Samuel and Phoebe Van Schoonhaven Thorne, was no Frank Merriwell himself.

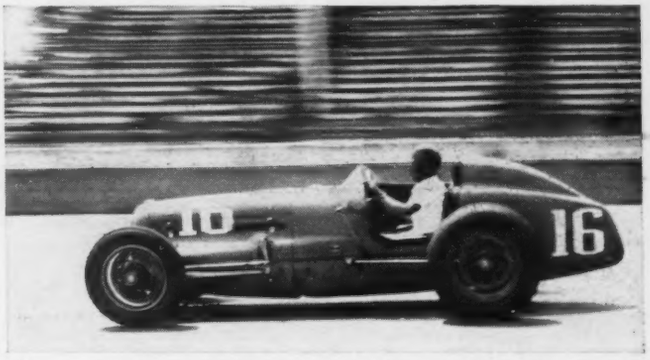
After nearly 45 years of raising the eyebrows of New York society, Joel Sr. married a little Irish girl named Mary Casey, a Barnard College professor and 13 years his junior. This betrothal was the final straw for staid mother and father and Joel and Mary found themselves cut off from the Thorne fortune in banking, railroading, importing and Long Island real estate.

But the birth of Joel Jr. in 1914 thawed old Samuel visibly and he doled out $500,000 to help defer maternity costs, etc. When the old man died three years later, he left his grandson an outright grant of one million dollars.

About the same time Joel Sr. and Mary separated. Young Joel and his nurse were taken in by his grandmother, who was assisting his father in shrugging off his plebeian wife.

The divorce trial was clogged with nastiness. Somehow papa Joel and his mother managed to dredge up a sailor who testified to less-than-honorable relations with Mary. She in turn opened the file on hubby, but, lacking the legal horsepower, the decision and custody of their son went to Joel Sr.

Ronnie Householder screams down the Indianapolis back straight in Thorne's 1938 entry. Six-cylinder produced 365 bhp.



Thorne Engineering made the grade at Indianapolis in 1946 with this pair of winners: Robson and the Sparks three-liter.

The mud from the trial had barely turned to dust when grandmother died, leaving father and son alone with that stupendous pile of money. However grandfather Samuel had spotted the seeds of imprudence in his heir and before his death had tied the fortune into a labyrinth of trust funds and legacies. In the light of future events, it was a wise move.

Not being inclined to settle down and assume the duties of full-time father, Joel Sr. made arrangements to pasture his son in a good home. A Mrs. Alice T. Sirkle of Denver, Colorado got the job by answering a classified newspaper ad. For her efforts she got little Joel and the administration of his $18,000-a-year stipend.

In 1924 Joel Sr. was clipped by a passing car while making repairs to his own *(Continued overleaf)*

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machine along a Connecticut roadside. He died in a Danbury hospital. At 10 years of age, his son had seen him but a few times in the past five years.

The boy received his secondary education in relative peace, then came east to enter Rutgers University. He was reunited with his mother and planted her in a $60,000 spread near New Rochelle, N.Y.

Academically speaking, Joe (as he insisted on being called, in preference to the more sedate-sounding original) was an outstanding speedboat pilot. During his career at Rutgers he became known as the "Dizzy Dean of Outboards" and in 1933, at age 19, won the American Outboard Association High Point Trophy. In gathering the 17,135 points to win the title, it was conservatively estimated that Joe dumped $50,000 into the campaign.

After three years at Rutgers and a brief stay at the University of London, he gave up the cloistered life for more exciting outlets . . . in the form of fast boats and cars and a long, curvy file of stunning women.

If anything fascinated young Joe more than rakish, flame-belching machinery, it was rakish, flame-belching women. With a walletful of money and an outlook on life something less than monastic, he was able to keep himself well supplied with superlative young ladies. As he began to infiltrate the racing game, first as an interested spectator, then as a fledgling car owner and driver, he continually kept one of these eye-popping females in tow.

A worn personal biography sheet still on file at the Indianapolis Motor Speedway serves as an excellent indication of how much Joe enjoyed the opposite sex. After the query "Name your greatest thrill at Indianapolis," he has neatly handwritten one word . . . "Suzanna."

Most old-timers at the Speedway can remember the days when Joe would import these dolls from the west coast each May, flying them in first-class. Invariably he would tire of their company after a few giggly days and they would be returned home . . . by Greyhound bus!

Undoubtedly after 1934 automobile racing replaced speedboating as Thorne's second most important preoccupation. His formal entry into the upper echelons of the sport came as a car owner in the 1935 Indianapolis 500. As the sponsor of a ragged old Studebaker 8, driven by a smiling newcomer named Jimmy Snyder, Joe was almost unheralded in the racing world. The boys at Indy had seen rich kids arrive before, only to watch them scurry home when they sensed the frustration and drudgery in big-time automobile racing. The veterans were even more convinced they had seen the last of Thorne when his machine struggled home a dismal 22nd.

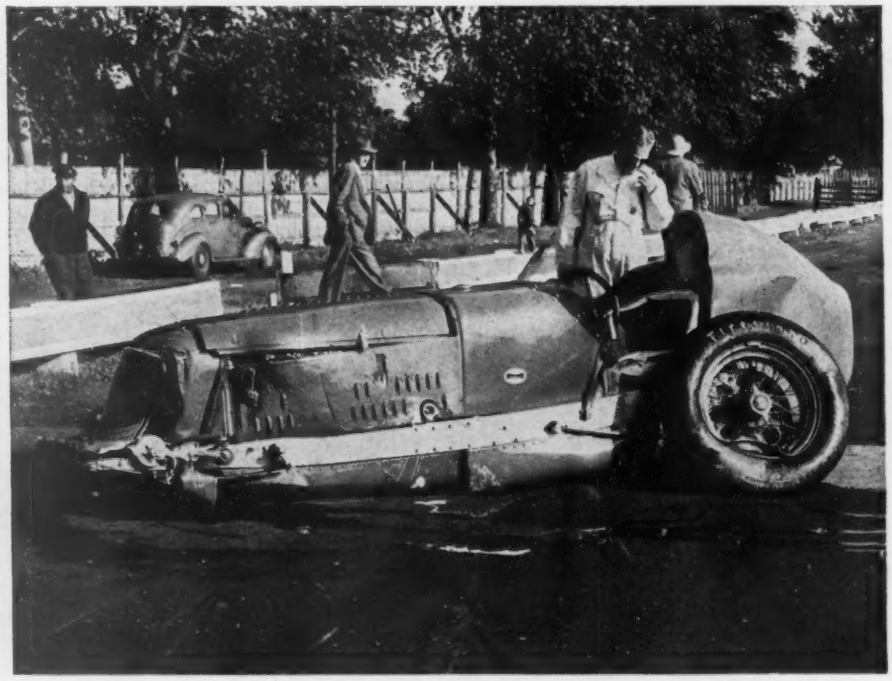
Of course they were wrong. Joe would return, and in a fashion they would never forget. And in view of the future impact Joe's azure-hued cars would have at the Brickyard, there was an ironic aptness to the name of Snyder's 1935 car: "The Blue Prelude Special."

Less than a month after the '35 500, Joe took his first shot at driving. He chose to begin with a group with whom, on the surface at least, he seemed an ideal compatriot. The ARCA was an organization devoted to the propagation of European-style road racing in the United States. In a very real sense it was the parent of the SCCA, in that many of its principles, mainly that of properly-bleached amateurism, survive with that group today. In 1935 the ARCA was composed of a select coterie of blooded eastern sportsmen. To many of them, Indianapolis and its related track racing was a limbo inhabited by masses of slobbering, latter-day Visigoths.

It was the habit of these gentlemen to hold discreet little speedfests on twisty, continental-type circuits in and near quiet hamlets like Alexandria Bay and Briarcliff, New York. In all justice to the ARCA, it fathered some outstanding racing talent, including the late Miles and Sam Collier and FIA representative George Rand. But, let's face it, they just weren't prepared for Joe Thorne.

Joe made his entry at the "Grand Prix of the United States," scheduled for June 23, 1935 on the 3.29-mile Briarcliff course. He was among an exclusive 17-man

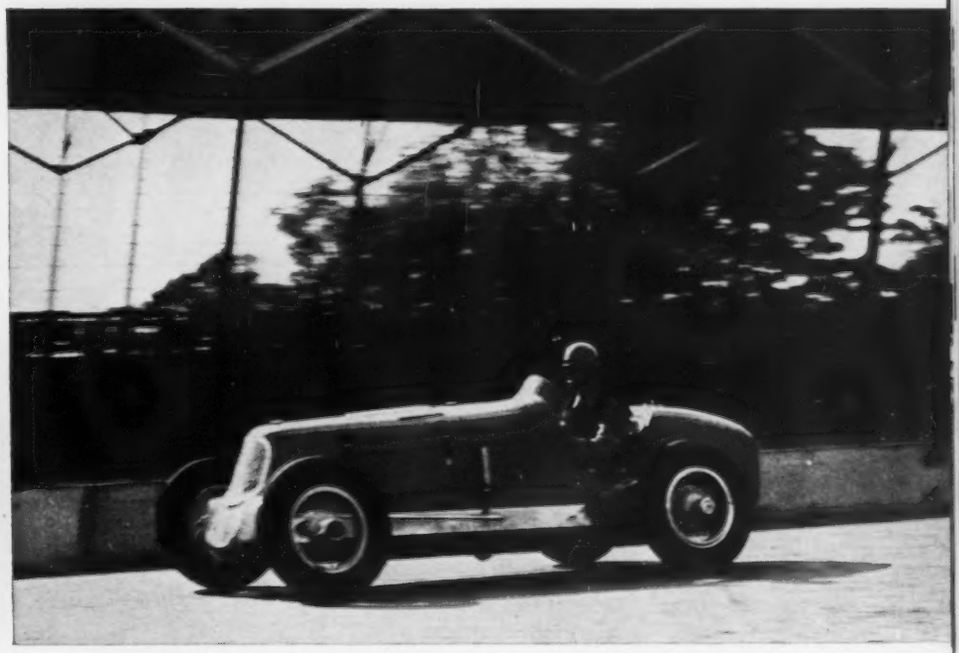
Thorne examines the rear suspension of his Sparks-designed six at the 1940 event.



Prewar German ace Rudi Caracciola, attempting a postwar comeback in the 1946 race, lost Thorne's 4.5 on the southeast turn. Surplus tanker's helmet saved his life.

For 1938 race, field included Thorne, Jimmy Snyder, left, and Ronnie Householder, right. Snyder was the best big-car driver of the trio, with Ronnie and the Boss following at a very respectful distance.

Never a traditionalist, Thorne tried this face mask for '41 race, but didn't use it.



A man in pursuit of his star. Joel Thorne practices his front-drive Offy for the 1937 try. Indy boss Rickenbacker wouldn't let him substitute this car for qualified machine.

the Esses in a full-lock slide and roared past on the climb to Point Blanc corner. As the tight turn loomed up, they would watch in horror as Joe penetrated beyond all known shut-off markers before applying his tiny mechanical brakes. On occasion number 39 would exit up the escape road in a flurry of dust and stones as the less aggressive witnesses slowed prudently and rounded the corner . . . only to be sucked under again a few miles down the road.

Despite a number of diversionary trips, Joe managed to climb to third place within five laps. At 65 miles he was in first place. But a pit stop dropped him to second and he was unable to improve on that position before the flag dropped. He equaled the lap record in his rush to catch up but finished 9.6 seconds astern Langdon Quimby's modified Willys.

Following the race Joe created an unholy rumpus. Never one to mince words, he accused the race officials of blatantly cheating him out of the victory. Unused to this sort of nastiness, the ARCA accepted his protest without enthusiasm. After a perfunctory check of the lap charts, his complaint was flatly disallowed.

There ended the short, fitful romance between Joe and amateur road racing. Although he undertook road competition on other occasions, he never returned to the relaxed events of the ARCA. Old members are too discreet to say so, but the implication is clear he was never missed.

Nineteen-thirty-six saw him back at the Speedway with two cars powered by hulking six-cylinder Dodge engines (entered under the name of California relative Clifford Thorne because Joe was involved in a legal action at the time). Experienced Russ Snowberger was assigned to one while Joe planned to drive the twin.

Snowberger started the difficulties by scraping off three feet of his car's nose on the retaining wall. In the meantime Joe's driving convinced the AAA observers he was not yet ready for 500 competition and he relinquished his seat to Dave Evans. But Evans couldn't get the car near qualifying speeds and Joe left the track determined that 1937 would be different.

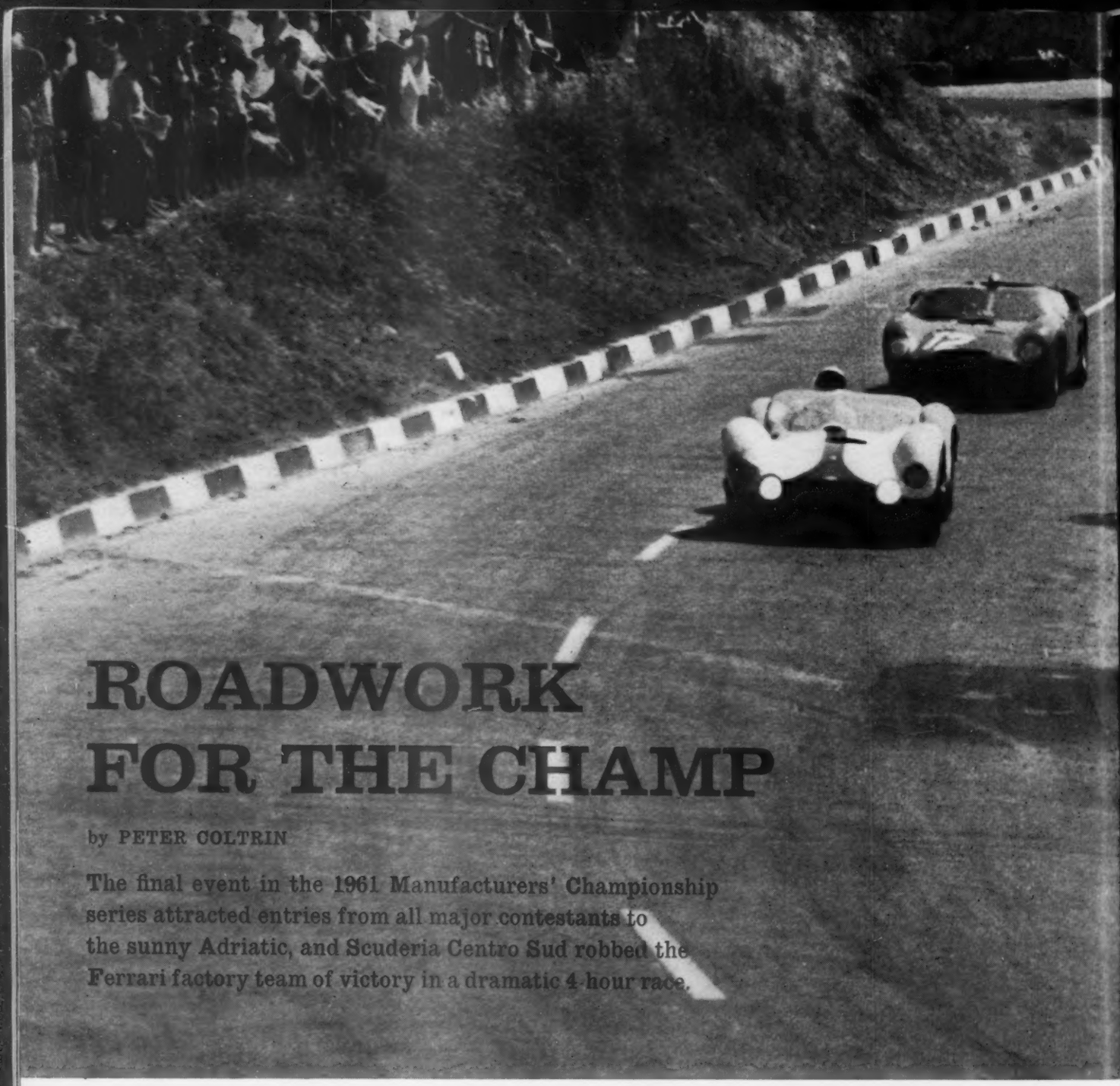
That summer he entered a *(Continued on page 90)*

starting field.

While the standard transportation included 35B Bugs, Rileys, MGs and racing Austins, Joe was at the wheel of a Ford. Actually his selection of a mount was not as blasphemous as it sounds (there were two others also entered). No ordinary Ford, Joe's car was a specially modified machine, built for the 1933 AAA Elgin Road Races and was said to develop 120 bhp from its flathead V8 engine.

It was generally acknowledged that this lippy 21-year-old giant (at that time sporting a Ronald Colman mustache) would be a genuine, if not entirely welcome, threat for top honors.

On the first lap of the 99-mile race, Thorne trundled the roadster from 15th to 9th place. Not a few of the racing motorists, merely on the course for an afternoon's drive, were frightened silly as the Ford jounced out of



ROADWORK FOR THE CHAMP

by PETER COLTRIN

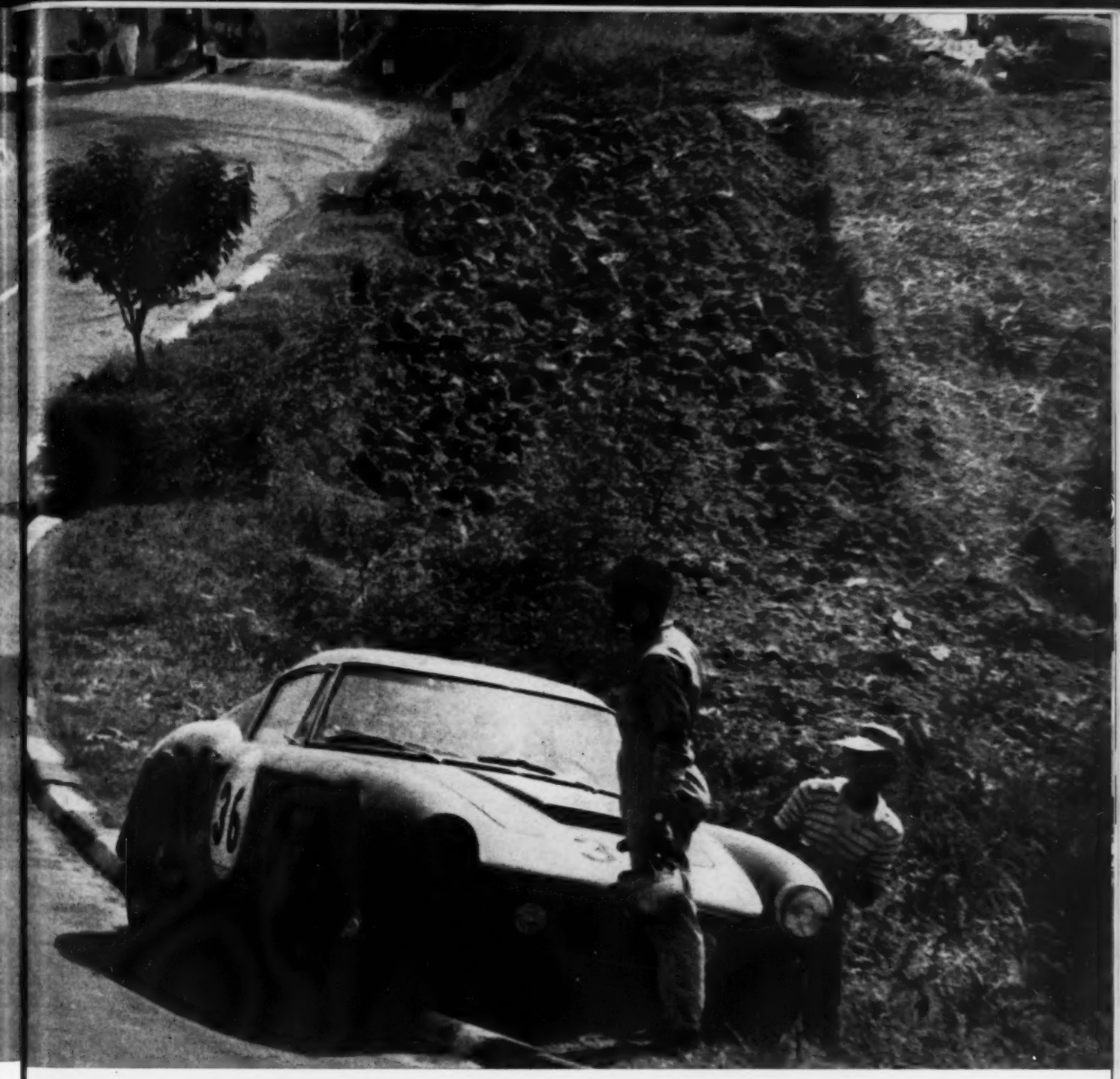
The final event in the 1961 Manufacturers' Championship series attracted entries from all major contestants to the sunny Adriatic, and Scuderia Centro Sud robbed the Ferrari factory team of victory in a dramatic 4-hour race.

• With no sports car race counting for the Manufacturers' Championship at Buenos Aires this year and the Tourist Trophy again limited to G.T. cars, the fifth and last event of the 1961 series saw a return to Italy and, happily, to open road racing over the Pescara circuit.

Pescara, located midway on the Italian Adriatic coast boasts not only a large fishing and tourist industry, but one of the finest and toughest road racing circuits in the world. It's unfortunate that in the last few years the local club has been financially unable to stage major events, the last important one being the 1957 Formula One race won by Moss with a Vanwall. This year's race, the 27th "Gran Premio Pescara" continued a series perhaps best remembered for its pre-war Mercedes-Alfa battles when it was called the Coppa Acerbo. Not forgotten too is the winner of the first Pescara race in 1924, Enzo Ferrari, who was driving for Alfa in those days.

The circuit, made up entirely of roads in daily use, is over 15 miles long and triangular in shape. From the starting line, located on the edge of Pescara, the course goes through the outskirts of town before turning sharply to the right to begin its twisty climb into the hills. It passes various farms and vineyards until, between the villages of Spoltore and Cappelle sul Tavo, through which it runs, it reaches the highest point on the route. On the descent past Cappelle, which is the

Pre-race worry marks faces of winners Bandini and Scarlatti, Bazzi seems unemotional, but team chief Dei smiles serenely.



second corner of the triangle, the curves decrease in radius becoming quite fast as they lead onto the first of the two maximum-speed straights. This first long straight is slightly downhill and, barring headwinds off the Adriatic, is the fastest part of the course. At Montesilvano there's a 90° right leading onto the second straight paralleling the sea front. Just before reaching the finish line there's a tight artificial curve or chicane which was introduced before the war so that cars wouldn't be going past the pits and approaching town at top speeds. Summed up, the circuit possesses all the ingredients for a good test of cars and drivers.

Ferrari, with three victories and a second place to its credit this season, had already won the 1961 title, so there weren't the usual number or variety of competitors in the large-capacity sports car and G.T. categories.

The three-liter sports car class was composed of six entrants: three Ferraris opposed by three Maseratis. Scuderia Ferrari was represented by Richie Ginther and Giancarlo Baghetti, co-driving a rear-engined 2.4 liter V6 car. Centro Sud had on loan from the factory a Testa Rossa V12 with independent rear suspension, driven by Lorenzo Bandini and Giorgio Scarlatti. The third Ferrari was an older *(Continued on page 78)*

27TH PESCARA GRAND PRIX

Pescara, August 15, 1961

Four hours, 15.9 miles per lap

1	Bandini/Scarlatti	Ferrari TRi/61	355.76 miles (88.94 mph)
2	Orthuber/Barth	Porsche RS61	347.31 miles
3	Boffa	Maserati Tipo 60	340.15 miles
4	Arents/Hamill	Ferrari G.T.	388.52 miles
5	Davis	Osca 1600	331.59 miles
6	Bettoia	Ferrari G.T.	328.70 miles
7	Cacciari	Ferrari G.T.	319.08 miles
8	Bini	Osca	316.57 miles
9	Zagato	Alfa Romeo Zagato	314.27 miles
10	Bulgari	Alfa Romeo Zagato	312.64 miles

Fastest lap, Ginther, Ferrari 246 Sport, 9:55.5, 96.05 mph

SIMCA 5

Chrysler's latest import tested in Europe: Like most of her sisters from Paris, this baby is easy-handling, light and lively.

• When the Simca Aronde was introduced in 1951, its family resemblance to the Fiat 1400 was clearly evident. The Aronde, however, had an engine of only 1220 cc developing 42 bhp. In the ten years that have since passed, its Italian cousins have grown up as well as several early competitors of the Aronde, while the Simca has refused to follow this trend. The Simca engine has been enlarged only to 1290 cc, although power output has been raised to 62 bhp in the five-bearing Super Rush version.

In France today, the car is alone in its class. It is possibly unique in the world for its combination of fuel economy and performance.

The latest development, which may even be the ultimate development of the Aronde, is the Simca 5, now available with 70 bhp on the American market.

CAR AND DRIVER test-drove this car in France, before production actually began, with the 62 bhp engine installed in the initial batch of 1400 cars built. The test figures will consequently be slightly inferior to the 70 bhp models now on sale in the U.S.

The Simca 5 has been produced at the order of the Chrysler Corporation who specified equipment, colors, etc. The interior is neat and practical, but we were surprised to find the individually adjustable front seat backrests (standard equipment on Simca Monaco and Montlhéry in the home market) supplanted by a bench-type front seat. Since the overall seat width is only 47 inches, we question the wisdom of this decision. In the Simca Monaco, which we tried at the same time, the driving position is commendable, the well-padded seats even providing some lateral support. We felt this seating should at least be optional for the Simca 5.

The rake of the steering wheel and its height in relation to the seat are irreproachable. It's interesting that Simca still uses underfloor-hinged clutch and brake pedals, when practically all quantity-produced European makes have long since adopted pendant pedals. The pedal movements on the Simca 5 are, however, more natural to the ankles and feet than on some of the latest cars we have driven with pedals hinged higher.

The shift lever lacks precision in all its movements, but even before getting used to the car, we got the right gear every time, including some very quick and even brutal shifts. The uncertain feeling persisted in spite of this and was most pronounced when making a leisurely change from first to second.

Opposite the gear lever on the steering column is a light switch including a high-beam control. Dimming the headlights involves twisting this lever—unduly complicated for an operation performed so often. Arondes of 1955 to 1958 had a different system where one finger could select the various stages of lighting, and on some older French cars, notably the Peugeot 203, a mere flick of a lever gave high or low beam.

The instrumentation, by modern standards, is adequate, but the test car's speedometer was wildly optimistic. Readings of 90 mph could easily be reached though the car had a timed top speed exceeding 80 mph by a very small margin.

Driving the car, the wheel is pleasantly free from vibrations at any speed and with 3½ turns lock to lock

(Continued overleaf)

Passengers as well as the driver will soon appreciate the good overall finish of the Simca 5. In addition, this picture shows the simplicity of controls and instruments, and gives an impression of the all-round visibility offered by conservative styling.

Although much space in engine compartment is taken up by air ducts, large air filter and the battery as well as various tools and accessories, all parts requiring periodic maintenance remain relatively accessible. As an important safety feature, a windshield washer is included as standard equipment.

Starfire ... AN OLDSMOBILE ORIGINAL

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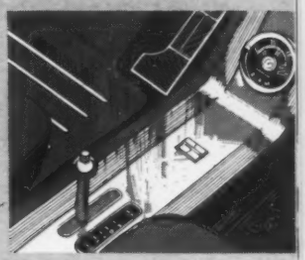

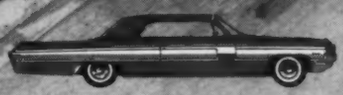

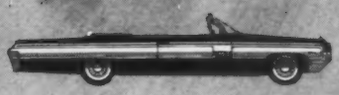

Two models—featuring a brand-new coupe for '62—with all this standard equipment: 345-h.p. Starfire Engine with 10.50-to-1 compression ratio • 4-S Hydra-Matic with stick control • Dual exhausts • Fiber-packed mufflers • High-torque 3.42-to-1 rear axle • Foam-cushioned bucket seats • Tachometer • Power Steering • Power Brakes • Clock • Windshield Washers • Color-matched luggage compartment.

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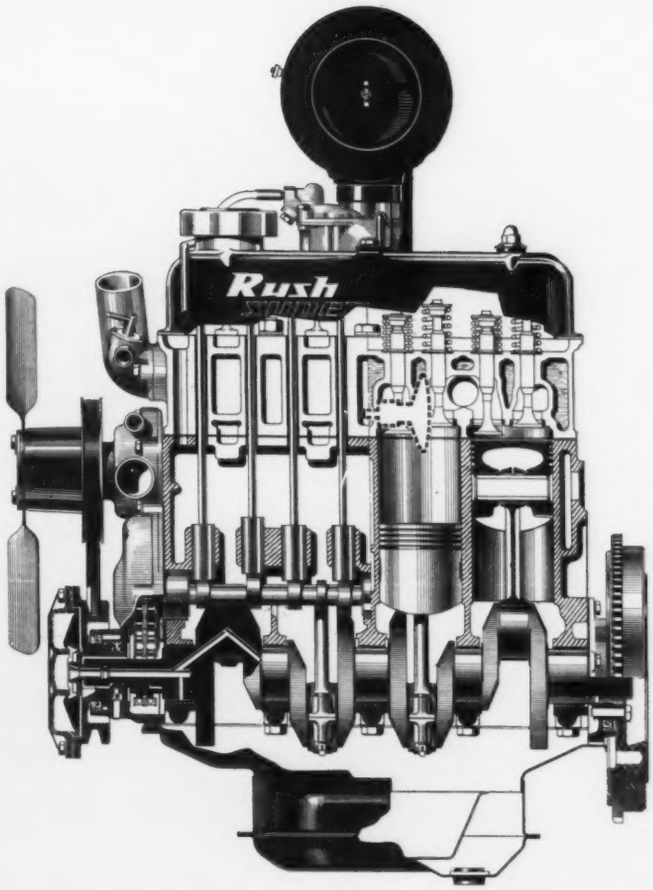


The high specific power output of the Super Rush engine belies its classical conception without affecting wear or reliability.

at no time is any significant effort called for to complete a turn. The lock is wide enough to allow parking in very small spaces and rearward visibility is ample.

Passengers, although complaining about poor headroom in the back seat, found leg room sufficient and noted the silence of the car—a rare quality in a light sedan—and Simca deserves praise for judicious use of sound-dampening materials.

The test car was running on French-manufactured Dunlop tires, which, on wet roads, never failed to induce a sense of uncertainty as to whether the front or rear wheels would slide first. Consequently the driver had to be prepared for correction in both directions. The fact that the car rarely slid at all on good roads was no comfort, for the idea remained that there would be no warning if it did break loose when entering a bend too fast. As a result, we didn't feel invited to take bends close to the limit.

When accelerating out of relatively slow corners, the rear end could be made to slide out fairly easily, but on such occasions the front wheels retained a good grip, even on *pavé* or cobblestones.

Unfortunately we had no opportunity to test the same car with different tires, but there would probably have been quite a difference if, for instance, Michelin X or Pirelli Cinturato had been fitted, not only in terms of town-to-town average speed, but in terms of driver's peace of mind. In the dry, the Dunlop tires were not objectionable. Tire squeal was practically non-existent and rolling noise was negligible on most surfaces.

The Simca 5's handling characteristics are nearly neutral, with a tendency to understeer. The suspension is definitely on the firm side and body roll is slight. On a road in northern France all four wheels were lifted clear off the road at approximately 50 mph on a sharp rise, the spring deflection when *(Continued on page 79)*

ROAD TEST
SIMCA 5

Price as tested: $1650 P.O.E. New York
Importer:
Chrysler Corporation
Detroit 31, Mich.

ENGINE

Displacement	78.7 cu in, 1290 cc
Dimensions	4 cyl, 2.91 in bore, 2.95 in stroke
Valve gear:	
Pushrod-actuated vertical in-line overhead valves	
Compression ratio	8.5 to one
Power (SAE)	62 bhp @ 5200 rpm
Torque	74.2 lb-ft @ 2600 rpm
Usable range of engine speeds	1100-6000 rpm
Corrected piston speed @ 5200 rpm	2540 fpm
Fuel recommended	Premium
Mileage	26-32 mpg
Range on 11-gallon tank	280-350 miles

CHASSIS

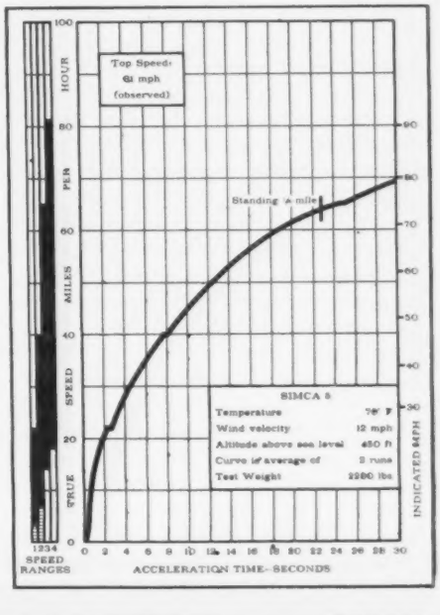
Wheelbase	96.3 in
Tread	F 49.4 in, R 49.2 in
Length	165 in
Ground clearance	5½ in
Suspension:	
F: Ind., wishbones and coil springs	
R: Live axle with semi-elliptic leaf springs and auxiliary coils	
Turns, lock to lock	3½
Turning circle diameter, between curbs:	L 32½, R 34 ft
Tire and rim size	5.60 x 14, 14 x 4 J
Pressures recommended	F 21, R 23 psi
Brakes, type, swept area	10½-in drums, 236 sq in
Curb weight (full tank)	2050 lbs
Percentage on the driving wheels	47.5

DRIVE TRAIN

Gear	Syn-chro	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	4.72	—	20.96	—3.4
1st	No	3.85	64%	17.01	4.2
2nd	Yes	2.35	88%	10.43	6.8
3rd	Yes	1.25	25%	6.53	12.8
4th	Yes	1.00	—	4.44	16.0
Final drive ratio				4.44 to one	

ACCELERATION

Zero to	Seconds
30 mph	4.4
40 mph	7.9
50 mph	12.4
60 mph	18.7
70 mph	31.0
80 mph	44.0
Standing ¼ mile	22.8



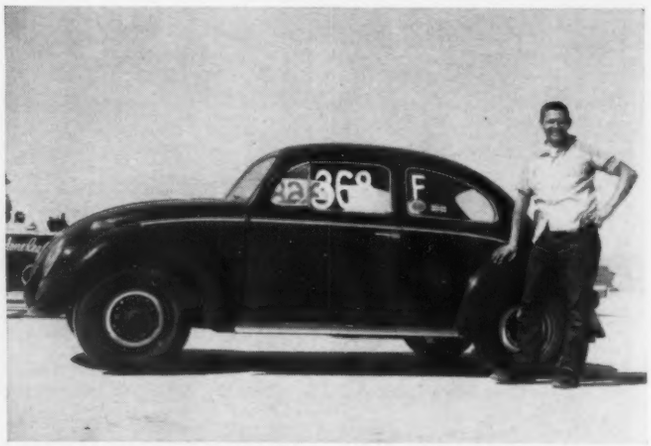
BONNEVILLE 1961

by GRIFF BORGESON

This year's straight-ahead World Series was down on glamour with the absence of the LSR boys, but up on speed and sport.

John Sconfienza's Aston Martin was the first to run at B'ville. Without touching its touring trim it recorded a sizzling 139 mph.

Ralph Chase, of Orange, New Jersey, packed his Paxton-blown Porsche and took off for the Salt. He clocked a neat 105 mph.



Dick Beith, of Concord, California, is the proud owner of the world's fastest VW. Its Pepco blower pushed it up to 101 mph.

• The 1960 season on the Salt was the greatest and most active in the history of the world's most famous straightaway speed course. Due to the greater-than-ever enthusiasm and publicity it seemed inevitable that the '61 season would be equally memorable. It was, but with a difference.

In addition to the week of the annual Bonneville National Speed Trials seven weeks had been reserved last spring for Land Speed Record attempts. Then, one by one, each of these was canceled. Donald Campbell decided to make his second effort in Australia. Ermie Immerso decided to de-bug his twin-engine, four-wheel-drive streamliner by running it with a single engine and on a short course. Then Dr. Nathan Ostich and engineer Ray Brock went to the Salt early in July and were appalled by what they saw: a surface so deteriorated that it seemed to be unfit even for short-course cars to use. They canceled and were followed by Mickey Thompson, who also came, saw and threw in the towel.

The rumor had been circulated that the Salt was so bad that even the Nationals would have to be canceled. This proved to be untrue but undoubtedly kept many contestants away. Nevertheless about 125 showed—a fairly good crop for any year—and a good meet was insured. And, through the excellent efforts of Utah's Road Commission, a very good, 8.5-mile course was prepared. It was choppy at the south end and through most of the second of the three timed-mile traps, after which it became as smooth as during an ideal year. Due to its bone dryness it provided the best bite in the Salt's history and it was safe to predict very fast times.

This was confirmed and spirits rose when Knot Farrington of New Orleans made one of the first runs of the meet. This year his T-Bird, powered by a GMC 6-71 blown, 429-cubic-inch Chrysler, had had its basically stock body made the foundation for a very beautiful streamlined shell. Knot rolled the maroon car off its trailer, pushed it to the starting line and streaked over the Salt at 217 mph . . . 17 mph over the existing record. The following morning he backed that up with a new two-way record of 212.774 mph and a couple of days later he boosted this to 219.254, an all-time record for gasoline-fuel machines.

Almost as startling was the performance of attorney Mark Dees of Pasadena. Dees's Tempest-engined streamliner could not be completed in time for this year's meet but Dean Moon offered him the hot-shoe post with his Devin-bodied Moonbeam. This unblown, 354-cubic-inch Corvette-powered special had only turned 174 mph the previous year but daring Dees nailed the throttle to the floor and hurtled through the traps at 202.72 mph on his first, warmup run. A piston or two melted in the course of this ordeal but these were replaced later in the week and Dees/Moonbeam boosted the B Sports Racing class record from 178.068 (where it had stood since '57) to 189.390 mph.

J. A. "Gus" Stallings was back for his third year. Gus, a dedicated follower of C/D, is a semi-retired Phoenix, Arizona automobile dealer who, though rich

Summers brothers recorded a fantastic 302 mph on a practice run with 302 cubic inches. For going fast, they have a 454-cube Chrysler.

in years, stays exuberantly youthful thanks to straight-away racing and a charming, equally enthusiastic wife. In '59 he drove his '57 300SL to the D Sports Racing class record of 143.769. Due mainly to the Salt's superior traction this year he raised that record to 144.839 mph with the same car.

In '59 and '60 Stallings also drove a 4.9 Ferrari with which he clocked a one-way 154.90. This year he gave the 4.9 back to Luigi Chinetti in exchange for a new three-liter Farina Cabriolet with which he set the AHRA quarter-mile C Sports record of 96.15 mph in 14.69 seconds. According to the factory manual the new Ferrari's 28 percent overdrive—with 3.10 axle gears—should propel it to a top speed of 162 mph. Stallings was sorely disappointed by having to prove, in the crucible of speed, that this was far more gear than the high-revving engine would pull. His best speed with this machine was 124.82 mph.

Stallings's experience was confirmed by John Douglas of Salt Lake City who had his hopes set on topping 150 mph with his 250/GT Ferrari. The engine had been modified, Douglas was pulling 3.64 gears and was prepared to go lower. But he could only wring 124.65 from the V12 before water began streaming from one of its tail pipes. He was "impressed by the slowness" of his and Stallings's Maranello mounts.

Far more cheerful about his Italian product was Ernest Schettler, prominent Salt Lake City businessman, local SCCA pioneer, member of the Salt Lake C of C's Bonneville Speedway Association and the first of those members actually to go racing on the Salt. Schettler entered the little Maserati Allemano 2000 GT coupe which he has been bashing around the roads of Utah since '58. Mechanic L. O. Leva had put a fine edge on the car's tune and Schettler set a new Class E GT record of 117.018; the previous record of 110.55 had stood since '58.

At the height of this activity construction engineer John Sconfienza of Butte, Montana wandered onto the Salt just to look around. He was driving a brand new DB4GT Aston Martin. Rod Schapel and Chuck Nerpel fell on him and insisted that he run the car through the traps since no Aston had ever been timed on the Salt. Sconfienza was easily persuaded and, right off the highway, turned a casual 132 mph. He watched the action for another day, clocked a more purposeful 137.40 mph and vanished as he had come.

There was every bit as much activity in the small-displacement ranks. Ray Howe of Citrus Heights, California is a devout believer in the potential of EnFo engines. He entered his '60 Anglia which was stock except for a 1.5-inch SU carb and an Aquaplane head. He turned 77.45 one way but was unable to top last year's Class E Touring Sports two-way record of 77.107 mph.

In E Touring Sports Class two Volvos vied with a supercharged VW. The '58 Volvo of R. C. Laton of Sacramento, California clocked 96.67 and the '60 model of Conie Robertson of Red Bluff, California turned a creditable 99.00 mph. But dominator of the class and one of the giants of the meet was Dick Beith, a high

school teacher from Concord, California.

Last year Beith spent 55 cents preparing his '56 VW for the Nationals; this covered the cost of a used, second carburetor and of the tubing with which to attach it to the engine. He set the just-mentioned ETS record at 77.107. This year he went all out, investing in a 69.5 mm EMPI stroker kit and camshaft and a Pepco Roots-type blower. He ported the cylinder heads generously and installed oversize Studebaker valves. To drive the blower he went to a bicycle shop and bought a few dimes' worth of chain and the smallest big sprocket and the largest small sprocket that he could find. This happened to give him a ratio of 2.2 to one which turned out to be just right even though it whirled the blower rotors at 12,000 rpm when the engine was turning 5000.

Beith drove the VW to the Salt with the blower chain removed, just letting the rotors windmill in the air stream. Then he snapped the master link in place and clocked 93.97 mph on his first run. Further tuning during the week enabled him to set a new ETS record of 101.69 mph, shutting off Wayne Thoms's 93.560 mph Borgward record which had stood since '59. Beith's pit crew consisted of students from the shop class which he teaches . . . very effectively, it's safe to guess.

In Class FGT Roy Elm of Fowler, California clocked 101.92 mph with his '58 1500 cc MGA. Robert Sutton of Roseville, California turned 113.92 with his 1600 cc MGA. The team of Graff and Smith motored all the way from Orange, Connecticut to clock 106 mph with their '58 Porsche and John Crenshaw of Salt Lake City achieved an easy 110.92 mph with his '61 Alfa Sprint Special.

Owner-driver Knot Farrington set Class A record of 219 mph in this Chrysler-engined Thunderbird. Car has topped 228 mph.

The real power in this class was electronics engineer Harry Umemoto of Playa del Rey, California. He drove to the Salt in a '60 Porsche Super 90 coupe which he had modified with an Iskenderian 107 cam, compression raised to about 9.8 to one, slightly increased piston clearances and generally meticulous tune. On the first day, with a stupendous exhaust note, he clocked 115.38 mph. The class record of 114.157 had been set by Bill Scace in '58 with a roller-bearing Porsche Carrera roadster, without windshield. The next day Umemoto altered his combination in an effort to go faster, dropped to 95 mph. He worked throughout the week with the help of 200 mph Club member Phil Freudiger and on Friday qualified at 118.57 mph. On the following, final day he set a splendid new class record of 119.236 mph. Umemoto ran individual, straight exhaust pipes from each bank, their length determined to do the most good at about 6000 rpm. Graff and Smith of Orange, Connecticut had an identical exhaust system on their Porsche but it seemed not to do the job that Umemoto's did. The only detectable difference was that Umemoto had welded small bells to the tips of his pipes. A better-sounding engine never has been heard on the Salt.

In Class EGT Dennis Wavra of San Diego turned 102.62 in a 2200 cc Triumph. Ralph Chase of Orange, N.J. drove his Paxton-blown Porsche 105.26. Bob Meyers of Lemon Grove, California led the class with a one-way 116.88 clocked by his two-liter TR-powered Morgan. Meyers, interestingly enough, is the year's top man in Southern California Timing Association point standings, a distinction earned with his fast and reliable Morgan.

A very good performance was turned in by David Babler of Santa Monica, who had installed a Hilborn-injected, 301-cubic-inch Chev engine in his '56 Austin Healey. His best speed of 167.59 mph still was no match for the unforgettable 191.136 set by Joe Carboni in C Sports Racing class with a Chev-engined Devin special in '59.

The title of "World's Fastest Corvette" belongs justly to the supercharged machine with which Brian Chuchua gained the BGT class record of 171.746 in '60. This year he replaced the 316-cubic-inch engine's 4-71 blower with a 6-71, buckled on the hard top, added 150 pounds of ballast to the rear and clocked a one-way 178.21 mph.

Spectacular performances were made in all classes during this year's Nationals, with a fastest speed for the meet of 313.780 by the 1710-cubic-inch Allison V12-engined streamliner of Art Arfons of Akron. More impressive, significant and praiseworthy was the one-way 302.317 mph clocked by Bob Summers, driving the supercharged, 302-cubic-inch Summers Brothers' streamliner. Running with a very sick engine Summers still managed to set a new two-way record of 262.231 mph . . . exactly ten mph over the existing FIA Class C record.

Bill Burke's pumpkin-seed streamliner which clocked 205.949 mph with a 156-cubic-inch Falcon engine last year was acquired by Mickey Thompson as a mobile test bed for his various hopped-up versions of the Pontiac Tempest four. Burke continues to drive the car and in mid-week was soaring happily down the course, taching between 255 and 265 mph when the GMC-blown, 183-cube Tempest let go. Searing water and oil spurted through tiny gaps in the firewall, burning the driver and covering the canopy so as to make vision impossible. Burke had no choice but to get out fast so he popped the chute and, an instant later, spun the car out to a standstill. He was only slightly shaken, the car was undamaged, a spare engine was installed but a rain storm prevented requalifying the car. Its best timed speed during the week was 235.22 mph but the FIA Class D record of 248.3 mph is well within this machine's potential.

A particularly impressive performance was turned in by Els Lohn at the controls of his Wee Eel II streamliner which is powered by a Paxton-blown, 950 cc Morris engine. Lohn set the G Streamliner record at 144.116, with a one-way of 172 mph!

Imported cars and sports cars this year accounted for 23 percent of entries in the Nationals, a new high. The directors of the world's greatest straightaway event are delighted with this trend and hope that the percentage will be even higher next year. For *your* entry blank and rules write Bonneville Nationals, 14556 Lyle St., San Fernando, California. —*GB*

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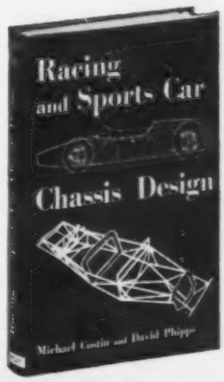

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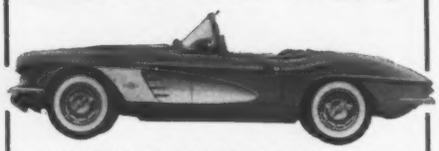

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ROADWORK FOR THE CHAMP

Continued from Page 69

V12 Testa Rossa owned and driven by Georges Gachnang, a Swiss who had installed a "home-made" wishbone independent rear suspension and had modified the body.

The two Maseratis of Scuderia Serenissima and that of Camoradi were given full factory support with chief engineer Alfieri and head mechanic Bertocchi supervising. Both the Serenissima cars were rear engine Tipo 63 models, one a four cylinder version and the other a V12. Assigned to the 2.9 liter four was Nino Vaccarella. The three liter V12 was driven by Bonnier and was the most sensational looking (and sounding) car present. With its various cooling slots, protruding filler caps and four megaphoned exhaust pipes, one almost expected to find a "Pignatelli" badge on the nose rather than a trident! After Le Mans this car had had its wishbone independent rear suspension changed to a system that Maserati calls a "de Dion flessibile," one feature of which is that the coil springs are mounted horizontally. Study of this system wasn't overly encouraged by the Maserati people and since it appears to have been unsuccessful, it's doubtful if it will be seen again. Bonnier, though unhappy with the car's handling, was impressed by its power. He said there was so much urge that the car gave a lurch on every upshift, including the one from fourth into top gear. The Camoradi Maserati was the Tipo 61, which had won at Nürburgring. Team chief Lucky Casner did the driving himself.

Five 250 GT Berlinettas backed up the sports Ferraris, those of Mairesse and Abate going especially fast in practice. In the two liter sports car class the best time in practice was put up by Scarfiotti in a new Osca 2000 powered by a two in-cam four cylinder engine and having wishbone independent rear suspension. Second fastest practice time was that of Boffa's Tipo 60 Maserati. A second factory Osca, a 1600 with i.r.s., was driven by Colin Davis.

The only Porsches entered were two 1.7 liter RS61s, both privately owned and driven, one by Spychiger, the other by Orthuber and Barth.

The race was held August 15, Italy's biggest summer holiday and a huge crowd turned up for four hours of racing and sunshine. The cars were lined up according to class rather than lap times. At the starter's "*Via!*" Casner was first away, followed by Ginther in the 246 Sport Ferrari. The Maserati led through the hills but as the road straightened out, Ginther went by. Tucking in behind, Casner tried to stay with the Ferrari by slipstreaming. He was soon forced to give up this tactic and drop back as the differential in speed was such that the Ferrari tow was causing the Maser engine to over-rev. With the gap between them widening, the two Americans finished the first lap followed by the Berlinettas of Mairesse and Abate. At the end of this lap Bandini stopped his Ferrari at the pits to find the source of some leaking oil. Apparently the oil tank had been overfilled or had not been secured correctly.

Soon others began having troubles. On the approach to Spoltore, Bonnier had stopped with a broken half-shaft on the second lap. Nearby, on the following lap, Mairesse spun on a right hander, leaving the road and the race with a damaged front suspension. Ginther, who had been experiencing strange handling characteristics with the usually stable Ferrari, made a pit stop at the end of his third lap to see if all was well with the rear suspension. Satisfied that it was and that a full fuel load and unscrubbed tires had caused the unusual behavior, he rejoined the race 30 seconds later in third place behind Casner and Vaccarella. Vaccarella, having made a slow start, was beginning to charge.

Ginther wasted no time in passing Vaccarella and soon had the blue and white Camoradi car in sight, completing his fifth lap less than seven seconds behind Casner. As they went through the hills, the pointed prow of the Ferrari was almost touching the Maserati's tail before Ginther regained first position. Soon Vaccarella passed Casner too, but three laps later, the ninth, saw him forced out with a broken transmission. On this lap Ginther, who was finding the rugged circuit very much to his liking, got around in 9:55.5, a time which remained the fastest time of the day. At the end of lap 10 Ginther stopped for fuel, handing the car over to Baghetti. This was done quickly and the young Italian left the pits with the Ferrari still in the lead. At the end of his first and only lap, Baghetti came slowly into the pits with the left front wheel running out of line, probably the result of an encounter he had had with some haybales on the first day of practice.

Casner thus found himself in first with a commanding lead of over five minutes. Half a lap behind him was the V12 Ferrari now being driven by Scarlatti. Before stopping for fuel and being relieved, Bandini had patiently passed all the tail-enders and then finally Boffa's Maserati, the Serenissima 250 GT of Abate and Orthuber's RS. There seemed, however, little this pair could do about the tremendous advantage Casner had at the end of two hours of racing. Having made a quick stop for *benzina* the Maserati was still ahead by almost four minutes and almost another minute was added to its lead when Scarlatti stopped and Bandini took over again.

Casner was on his 15th lap when once again the complexion of the race changed completely. He was attempting to get by a small slow-moving sports car which had been blocking his way as he approached and drove through Spoltore. After repeatedly flashing his lights and blowing his horn, the small car moved over and Casner, thinking he had finally been noticed, started past. As he did, the other car again got in front of him. Taking avoiding action, the Maserati ran off the road and turned over. Trapped underneath, Casner received severe leg burns from spilling oil and water before he was extricated.

Bandini was now virtually assured of a victory which before had looked so remote and he wisely eased up.

A hard-driving Abate was now in second place, after passing and pulling away from the Orthuber Porsche which was now being driven by Barth who, in turn, was well ahead of Boffa's Maserati.

1961 Manufacturer's Championship

1	Ferrari	34 points
2	Maserati	16 points
3	Porsche	14 points
4	Osca	1 point

—*PC*

THE CHEERS WERE MUFFLED

Continued from page 56

get by the Lotus coming off the banking but it was the contrary on the road circuit with Moss coming by the pits first practically every time.

Scuderia Ferrari came to Monza in full force; six cars including a *muletta* and five drivers, including Ricardo Rodriguez who it seems will join the Ferrari factory team in 1962, though nothing official has yet come out. He astounded everybody by turning second fastest practice time and got himself onto the front row of the grid and into the limelight. Ricardo is obviously a good driver with considerable experience behind him, but it was also obvious that he has a lot to learn about Grand Prix racing as well as obeying team orders. His race car had a 65-degree V6 engine while the rest of the team, including Baghetti, had 120-degree engines. Phil had a brand-new car for the race and a new engine to boot, installed on the eve of the race. Valve spring trouble had begun to manifest itself and he yelled loud and long for a new engine.

As it turned out his suspicions were correct and his was the only Ferrari to finish the 266-mile distance. Rodriguez and Baghetti were the first to go, followed by Ginther shortly thereafter, all with defective valve springs. With the retirement of Moss and Brabham, Hill maintained his lead for the duration of the race. In the opening laps, however, he and his Ferrari teammates gave an exciting demonstration of power and speed as they sailed down the main straight and onto the banking, he and Ginther sometimes side by side to avoid Ginther connecting with him in the slip stream; "slipstreaming could have gotten dangerous" said Richie Ginther after the race, "it's too easy to relax and an accident could happen in an instant—so I motioned Phil to go on at his own pace. We drove to team orders."

Thirty-two cars started the race, a huge field lined up two-by-two stretched back practically to the end of the straight. The rate of attrition among these back-row boys was high with the de Tomaso cars (powered by Conrero-Alfa and Osca engines) being among the first casualties. There were few protests this year regarding the Automobile Club's insistence upon using the combined Monza circuit. Last year, the English stayed away en masse; this year they were all there—ready and willing to race though not overjoyed at the prospect. The 130 mph average speed this year was only a shade less than 1960's average.

The actual start of the 32nd Italian Grand Prix was as exciting as any start can be. As the two lead Ferraris got off the mark, it was Rodriguez pulling in front of Trips, but by the Curva Grande, Richie Ginther came sailing by both Trips and Rodriguez to lead the field into Lesmo and down the back straight. Coming out of the second Lesmo, Richie looked over his shoulder to find Jimmy Clark's Lotus at his elbow. Astonished, Richie vainly tried to shake Clark, but couldn't do so until after the Curva Parabolica.

The next lap around was the fatal one. The leaders roared down the back straight with Hill, Ginther, Rodriguez, Trips, Clark and Baghetti in that order. Somehow Trips and Clark touched and the red Ferrari spun violently off the road. It sailed up the embankment on the outside of the track, smashed against the chain link fence and flew back onto the middle of the track. Clark's Lotus spun to a standstill and Jimmy climbed out, shaken but otherwise unhurt. Trips lay where he had been flung by the violent gyrations of the Ferrari. The race went on with no word passed out to the crowd that a serious accident had occurred. In the press office it was not known until practically the end of the race whether Trips was dead or alive, despite the ominous silence. Let us preserve the silence for Trips, and hope it doesn't bode ill for the whole of motor racing. —*JLA*

SIMCA 5

Continued from page 73

landing was comfortably progressive, with no bottoming. This may be due to a recent Simca refinement—auxiliary coil springs over the rear axle to supplement the semi-elliptic longitudinal leaf springs. This didn't prevent axle bounce, however, when accelerating on bumpy roads, inevitably resulting in wheelspin.

The performance provided by the Super Rush engine is more than adequate for all normal demands encountered in present-day driving. In addition, engine flexibility is such that an unsuspecting driver would imagine himself having at least 1½ liters under the hood. Restarts in second gear are possible on level ground and much town driving can in fact be done without ever moving the lever from third gear.

The sporting driver, however, will like to use the gearbox which has reasonably well-chosen ratios, 1st gear taking him comfortably above 20 mph, second to 40 and third to 65. The remarkably quick response from a blip on the throttle when shifting down is another endearing feature. It should be mentioned that the pedals are not ideally positioned for heel-and-toe operation, although it is possible without too much difficulty.

The 70 bhp engine had not yet entered production at the time of our visit to Simca. The aim with this increased power is not to raise the maximum speed of the car. In fact, maximum power is developed at the same crankshaft speed as in the 62 bhp version (i.e., 5200 rpm). But the torque curve has been lifted considerably in the medium-speed range, improving smoothness, acceleration and hill-climbing.

The new engine differs from the tested 62 bhp unit in having a higher-lift camshaft with longer opening periods, a bigger carburetor, larger manifolds, heavy duty valves and valve springs and an advanced ignition curve.

French traffic conditions place tremendously heavy demands on the brakes, and all French cars are noteworthy for efficient braking. The Simca 5 has 10½-inch drums all round, which proved efficient under all conditions met during the test. Brake squeal could not be provoked, and the car invariably stopped in a straight

(Continued on page 80)

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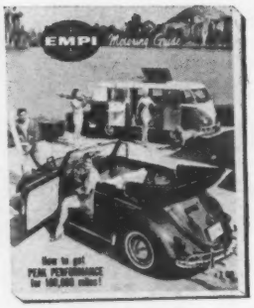

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THE ART CENTER SCHOOL

(Continued from page 79)

line. With such a generous friction area in a light sedan, the expected life of the linings should be well above average.

Maintenance instructions are relatively simple. Chassis lubrication should be undertaken every 1000 miles. Engine oil needs changing approximately every 2000 miles, and the oil filter should be dismantled and cleaned every 4000 miles. Transmission and rear end oil changes are only required at 10,000 mile intervals.

Out of 1 million Arondes made, some 65,000 are now in the United States.

If the ashtray is too small, the trunk is spacious, with a lid that opens when the key is turned, and stays open until firmly shut. The spare wheel is housed under the trunk floor and, if needed, would require luggage to be removed before becoming accessible.

The appearance of the Simca 5 is sedate and the finish is good. Weight control is very strict at this factory and the headlining is cut to the barest minimum, so also are the door panels, but everything is in place with no loose ends.

Summing up, the Simca 5 is a well-made car, which should be a very attractive proposition for economy-minded families looking for an all-round second car—or an all-round first one for that matter. *—JPN*

DRIVING THE W196

Continued from page 45

action that eases the pressure required near the end of the travel, but it's still a stiff clutch by any standards. To the left of it is a handy dead-petal, a brace for the foot when not clutching; once I tromped on the clutch and thought, "That's too stiff for the clutch, I must be on the dead-pedal." But it was the clutch, after all.

Back in the February, 1961 SCI we published the M196 power curve, which is extremely steep to a sharp peak at 290 bhp and 8500 rpm. There's not much torque until 5000 rpm; the first torque peak is at 6400 and there's a "second wind" at 8100 rpm. This is all as clear in action as on paper. The straight-eight pulls smoothly but with no sincerity to 5000, where it suddenly comes alive with the hollow, booming roar that marks these cars—sort of like two Porsche Spyders sounding off at once. It's not deafening but it does induce a ringing in the right ear. I only took the engine to about 7000, enough to get the full, sensual surge of that first leap of torque. It moves out—and right now—but more in feel like the Birdcage Maser than like the explosive Scarab-Chevy tested last month.

Engine throttle response was so swift as to be startling at first. A jab at the long-travel pedal for a downshift brings instant, eager response that overdoes it until you learn to reduce the dosage to suit the needs. This is a key advantage of fuel injection on a racing engine, since throttle response can be a problem with multiple big-venturi carburetor throats. I used full-bore to 7000 in third, fourth and fifth around the test track, which felt like a maximum of perhaps 120 mph with the low gearing and small back tires fitted to this much-flogged "demonstrator." It used up the short straights very fast indeed—which brings us to the brakes.

When I started out, the chassis—if not the engine—was cold, and when I applied the brakes the first time I was sure I was headed for the bulrushes. They began to warm up, though, and soon were answering the pedal with smooth, strong deceleration. The pedal is aided by an hydraulic servo developed by ATE for truck use, fitted for the first time to the SLR in 1955. It runs from a little vane pump back of the gearbox that wastes half a horsepower at peak speed.

It was only possible to probe the handling on two turns, one long, tight right and one fast left-hander, but it was clear at once that this was an amazingly easy and safe car to drive. It sometimes seemed that it wasn't just a case of being "forgiving," of allowing you to rescue yourself with ease; the W196 felt quite capable of handling the required rescue all by itself! I felt this strongly when I entered the tighter, closing turn a hair fast and the tail end swung smoothly, automatically out, saying, "Okay, correct like I told you and you're in business." (in German, of course).

At constant cornering speed the W196 has gentle understeer, but as you apply power and increase speed you feel the tail shifting easily outward toward balanced neutrality. More power will carry the attitude over to oversteer in an unbroken progression. The whole handling spectrum of this car is available at all times to the driver, in contrast to the Scarab-Chevy's more sudden transition from strong understeer to power oversteer. Feel of the steering is light but still highly informative; it has a way of instilling confidence. At 2½ turns lock to lock it is sufficiently fast to cope with the car's very gradual motions—a product of a high polar moment of inertia.

European Editor Jesse Alexander also tried the W196; so did Maurice Smith, Editor of THE AUTOCAR. Several years ago Maurice had driven Stirling Moss's Grand Prix 250F Maserati, so he was able to make interesting comparisons of these contemporary cars. He reported the Mercedes felt far more stable than the Maser, which tended to leap and jump about on its hard springing and which needed constant correction of its very quick steering. Maurice also said the ride of the Mercedes was far superior; it certainly was a comfortable machine, for a race car, and the low center of gravity assured that lean in corners was minimal.

You look almost through the very shallow windshield, out over a hood that's high in relation to your low, reclining position. I found that there was relatively little sense of driving an open-wheeled car, compared to the Scarab, for example, since the left front wheel is only partially visible and the right one is almost completely hidden by the high ram tube housing. Again compared to the Scarab, which felt like a dense chunk of machinery, the Mercedes had a curiously light, hollow feel as of a stiff shell to which the drive elements were attached. This one was obviously much-used by ranks of eager journalists, for it was a little loose both in appearance and action.

Finally one mechanic started waving flags at me and threatening to throw himself in front of the car, so I had to switch off and come to a halt back by the box of helmets. The many onlookers around the track began to disperse, the mechanics packed up their gear and as the echoes of its exhaust subsided, this W196 Mercedes again became the world's most fascinating mobile museum piece. *—KEL*

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ROAD RESEARCH REPORT: JAGUAR XK-E

Continued from page 32

precaution against severe damage caused by seizing, as the factory expects that many E-Types will be driven briskly while quite new, or even raced, before anything like a normal breaking-in period has been completed. Our average oil consumption came to one quart every 112 miles and this cannot be considered abnormal for a hard-working E-Type. Even for the 3.8 and Mk IX, the oil consumption figures are quite liberal, according to Jaguar Service. A range of 300 to 875 miles per quart is considered normal. Apparently due to the large quantities of oil being burned in the cylinders, the most frequent maintenance operation consists of cleaning and adjusting the spark plugs at 2500-mile intervals.

IDEAL LAND-CRUISER

The responsiveness of the engine is eye-opening. The tach needle will rocket up to the red line (and beyond) with the engine showing no signs of stress in any speed range. Engine noise takes the form of a pleasant mechanical whir, a very purposeful, comforting sound of well-fitted parts doing their job right. The engine is mounted quite softly within the chassis and at some speeds may be seen, through the hood louvers, to rock, though what little vibration reaches the occupants was, it seemed, emanating not from the engine itself but rather from road conditions. The feel of the accelerator is smooth and progressive after the initial, specified linkage slack is taken up. Silencing of the intake air is very good with no roar occurring at high revs. We had persistent trouble with pre-ignition in the 1500 to 2500 rpm range regardless of which superpremium we used, but we suspect the timing was not right on the button.

While we did not succeed in recording 150 mph in our top-speed runs, we did get to 145 without much difficulty even with luggage in the trunk, no attempt at tuning, and, most important, even with the top down. This is probably the key reason why 150 was not attainable, although getting top speed was complicated by the lack of an unlimited stretch of road and by one tester sitting on the seat back to get a photo of the instrument panel while at speed. We have every confidence the E-Type will go 150 or more on the 3.31 axle ratio of the test car. With the optional 2.93 to one ratio, the car will, according to Jaguar's Bob Berry, give a timed maximum speed of between 165 and 170, under neutral conditions.

The axle ratio chosen for racing, however, is either 3.54 or 3.77 depending upon circuits contemplated, as the extra acceleration is so much more valuable than a little higher all-out speed.

PROVING IN PUBLIC

The racing record of the E-Type, in the one season it has been available, is quite impressive. Two roadsters driven by Graham Hill and Roy Salvadori started it at Oulton Park on April 15th, Hill winning at 83.22 mph average, with Salvadori third behind Innes Ireland's Aston Martin DB 4 GT. Hill and Salvadori tied for fastest lap in 1:58.2—equal to 84.09 mph. One month later, Equipe Endeavour entered an E-Type for Michael Parkes at the Grand Prix of Spa—a GT event—and saw it come second 1½ minutes behind Willy Mairesse in a Ferrari Berlinetta. On May 22nd, two E-Types started at the Crystal Palace in a ten-lap GT race. Salvadori won at 76.40 mph with a 4-second lead on Jack Sears' similar car. Salvadori also shared the fastest lap with Michael Parkes, who was driving a Ferrari 250 GT, at an average of 77.70 mph.

Over ten laps of Brands Hatch early in June, Graham Hill and Roy Salvadori again saw their E-Types challenged and narrowly beaten by Parkes in the 250 GT Ferrari. Three E-Types ran at Silverstone on July 8th, Bruce McLaren with his own car, Salvadori with the John Coombs Racing Organization's car, and Graham Hill with the Equipe Endeavour Jaguar. Moss won easily with the Rob Walker Ferrari Berlinetta at 94.58 mph, with McLaren second, 19.4 seconds behind. Salvadori was fifth, separated from the New-Zealander by Lex Davison's Aston Martin DB 4 GT and Graham Whitehead's Ferrari 250 GT. Graham Hill's Jaguar overheated and retired.

The following weekend, three E-Types were entered at Aintree; Parkes for Endeavour, Sears for John Coombs and Denis Taylor with his own car. Sears lost to Lex Davison's Zagato-bodied Aston Martin after leading until the last lap. Taylor came fourth and Parkes retired.

In the Scott-Brown Memorial Trophy race at Snetterton on July 23rd, three Jaguar E-Types were in the field and finished first, second and fourth. Winner was Parkes with the Equipe Endeavour car at 89.83 mph. A week later, A. J. Lambert's XK-E won a 15-lap scratch race at Silverstone at 74.91 mph against unimportant opposition, and on August 5th, Lambert again drove at Silverstone in a club meeting and was defeated by a Lister-Jaguar and a C-Type Jaguar, while Sturgess placed his E-Type third behind two Lister-Jaguars in a 10-lap all-comers event.

At Brands Hatch on August 7th, McLaren, Salvadori and Graham Hill saw their E-Types defeated by Stirling Moss driving Rob Walker's Ferrari Berlinetta. Hill punctured and retired, McLaren was second and Salvadori third.

As a curtain-raiser event to the German GP at Nürburgring, the organizers staged a 6-lap GT race, in which Peter Sargent drove a brand-new E-Type into seventh place. On August 12th at Silverstone, in a six-hour relay race, R. Sturgess drove an E-Type as a member of the Jaguar Club team that finished third, headed by teams of Sprites and MGs. In American racing, the XK-E has not fared so well, having been trounced by two Corvettes at Santa Barbara, California, early in September. (See page 39 in this issue)

RACING PREPARATION

Cars supplied specifically for racing receive the following treatment from Jaguar: cylinder heads flowed, ports very accurately matched to manifolds, wider clearances allowed all around because mechanical noise is unimportant, competition clutch and lighter flywheel fitted, carburetor air cleaner and rear pair of mufflers omitted. The racing flywheel is only about three pounds underweight. The competition clutch has a bonded-and-riveted center-plate and

(Continued on page 84)

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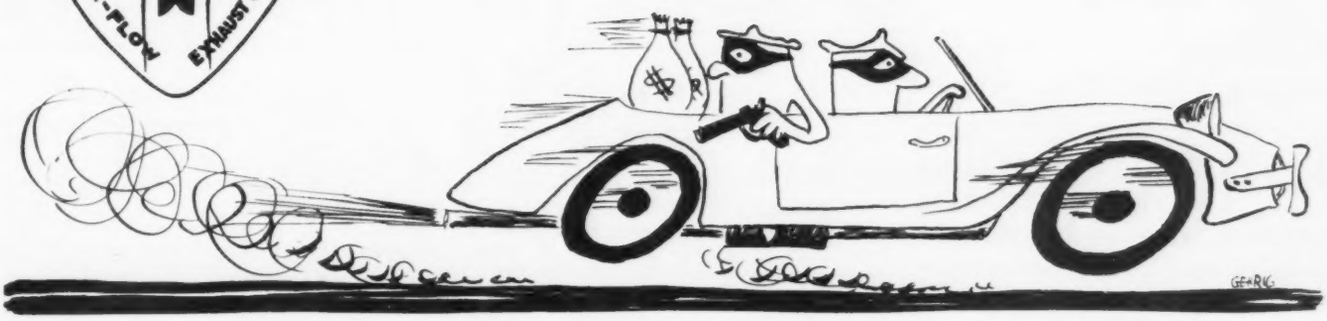

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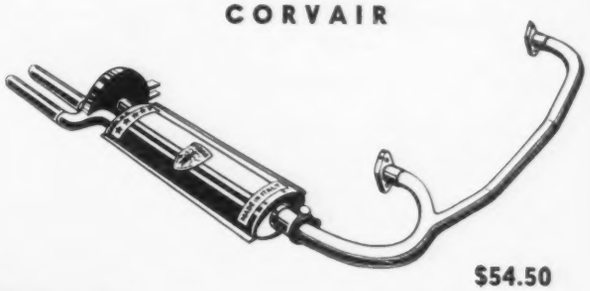

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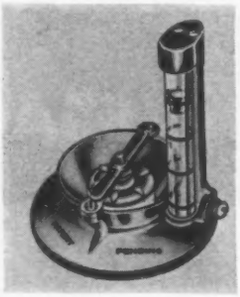

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(Continued from page 82)

stronger springs, but pedal travel is no shorter than standard. The engine work results in a power increase giving 265 bhp *net* instead of *gross*. The overheating experienced on some occasions in racing has, according to the factory, been overcome by small modifications in the circulatory system.

It should be pointed out that over 300 bhp have been reached with the 3.8-liter engine, using fuel injection, and with a power output of this order the E-Type would be a much more formidable competitor than is actually the case today.

The standard brakes would be adequate for racing on most circuits, but racing preparation includes ducting air to brake discs and calipers—to the front ones through trunking led from the main frontal air intake oval, and to the rear ones through special scoops fitted under the car. Friction material for racing is by Ferodo rather than Mintex.

In order to take R5 tires instead of RS5, the factory will supply special wheels for racing, with ½-inch additional offset. These wheels are strictly for competition and are available with painted spokes only.

BEATNIK SYNCHROMESH

The clutch is a 10-inch Borg & Beck unit with hydraulic actuation. A fairly heavy pressure is needed on the pedal and disengagement comes at the bottom of a long arc. The smoothness of the clutch is immediately apparent. This smoothness is the same whether starting with the engine just ticking over or with 2500 rpm on the tachometer, and seems undaunted by either treatment. For creeping through traffic the heavy pressure makes the undesirable practice of riding the clutch difficult to perform, yet it need not be a problem since the engine is so flexible that you can idle down to a walking pace in fourth gear and accelerate cleanly to the maximum.

This marvelous flexibility is deeply appreciated since the transmission has such poor synchromesh that gears are never changed needlessly. We feel the gearbox is definitely not on a par with the performance of the car as a whole and about the kindest thing we can say for it is that we didn't like it. This is a long-standing complaint that the E-Type inherits from the XK-150 and it seems difficult to understand why the development of a new transmission with Porsche-type synchromesh on all forward speeds, which reportedly has been going on for some time in Coventry, is not yielding results. It's even more difficult to see why the racing D-Type gearbox, which had synchromesh even on first, could not be adapted to the new car as an interim solution until a really satisfactory transmission is available.

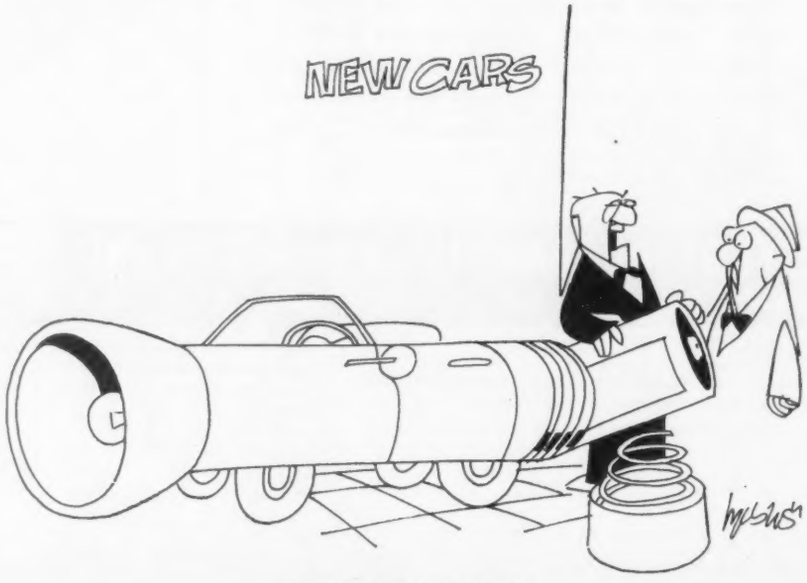
As it is, the lever often balks going into first and often grates going into the other forward ratios, particularly if a fast shift is attempted. Each shift requires concentration and even then any skill one might exercise may be obviated by the recalcitrant mechanism itself, yet at times it can slip in with disconcerting ease; you just never can predict in advance. The intermediate gears have a satisfying whine in character with the whir of the engine and the growl of the exhaust. The ratios are fine for all-around use.

DECELERATION UNLIMITED

The demand for stopping power with 265 bhp under the hood and a top speed of a century and a half assumes proportions not generally realized. Jaguar has solved the problem by using 11-inch discs at the front (mounted in the wheels) and 10-inch inboard discs at the rear, servo-assisted by a large capacity Dunlop booster (made under license from Kelsey-Hayes of the United States) activating two master cylinders. This works so well that retardation is limited only by the coefficient of friction between the tires and the road surface.

Staff testers agreed unanimously that the brakes are exceptional in capacity and fade resistance. They showed no signs of pulling the car after a series of crash stops from high speeds following acceleration runs with a purposely-set below-minimum pull-up distance. The fact that this maneuver could be carried out repeatedly in complete safety indicates the value of race-tested brakes. The D-Type in original Le Mans form, of course, had 12¾-inch discs with three brake pads in front and two at the rear while the E-Type has two pads per disc. The only uncomfortable moment encountered with the E-Type's brakes was during the first application after they

(Continued on page 86)



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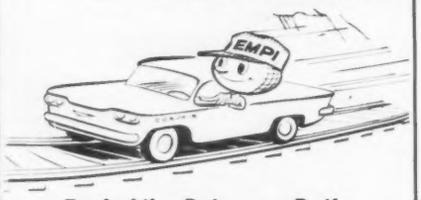

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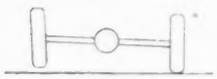

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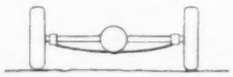

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(Continued from page 84)

had become wet. They could pull the car left or right or apparently not work at all, but the second jab at the pedal brought the car to a swift, sure stop since the discs dry out faster than drum units. Added benefits of the disc system are well-known: the pads can be replaced quickly and they are self-adjusting.

The Kelsey-Hayes power assist unit has an air reservoir which permits about 15 operations of the pedal after the power is turned off, certainly enough to provide a safety margin for stopping in the event of its failure. It operates directly on the brake pedal and is familiar to drivers of many American cars. The use of two master cylinders means that even if brakes on one set of wheels (front or back) should fail, there would still be a system that works. Both have electrical switches in their reservoir caps so that if the fluid drops below a safe level, a red light comes on on the dashboard. This light also signals that the handbrake is not fully released. On the E-Type we tested, the handbrake was adequate for holding the car on steep hills, but if it's anything like the handbrake on other disc-braked Jags we've driven, it will get out of adjustment soon. With all the other innovations on the car, it seems too bad Jaguar did not install Dunlop's latest self-adjusting handbrake mechanism. Perhaps they will on later cars; we understand this has already been incorporated on late 3.8's.

If we can agree that pedal pressures are "moderate" we would also state they are not vague. The action of the power assist is just that, not a case of "power control" being actuated with the brake pedal serving as a switch. The driver always has a definite control over how fast the car stops. Braking is even with a small amount of nose-bobbing and the shape of the seats helps keep the passenger from sprawling over the hood.

GENTLE GUIDANCE

A small-diameter, spring-spoked, wood-rimmed steering wheel works through rack and pinion steering to give the E-Type almost MGA-like handiness. There is quite a heavy return action, but it gives the car great directional stability. Taking your hands off the wheel at 110 or more can be done with impunity. At low speeds, the force needed to turn the wheels is quite high, but the E-Type is a man's car and most won't complain about this. It's also a car not intended for puttering around, so at turnpike speeds it's light and direct yet retains excellent feel.

Most of our driving was done with the wheel all the way forward and the column in the top position. Steering precision was excellent and with 2¾ turns lock to lock, play was virtually nonexistent. Road reactions would be transmitted to the wheel, however, which needed a firm hand when cornering.

The car is well balanced for high-speed handling. There's some amount of initial understeer yet with plenty of power on tap, the rear end will hang out in an impressive but very controllable attitude. The progression of the rear end toward the outside of a curve is a usable, not unpleasant phenomenon and the steering becomes very nearly neutral in behavior. Steering response when going into a corner, coming out of one or correcting a rear-end slide was instant, again a remarkable achievement in view of the basic stability of the car. With anti-roll bars fitted both front and rear, and a very low center of gravity, body lean was negligible right up to the maximum speed at which any given corner could be taken. When at the wheel, body lean was felt even less than photographs later showed it to be.

Most drivers will be impressed at the way the E-Type enhances their driving. This is not to say that any clod can slip behind the wheel and immediately break lap records, but an enthusiastic, non-racing amateur will find the car greatly extends his capabilities, while those with a definite competition bent will find it a useful, potent road tool. It will be interesting to watch the E-Type in American competition during 1962.

THE CASE FOR ALL-INDEPENDENCE

Before going further, some consideration of the rear suspension is appropriate. Wheel motion follows the pattern of wishbone suspension rather than swing axles, the half-shafts actually serving as the upper wishbone, giving transverse location. Longitudinal location is assured by radius rods. A great deal of attention has been given to the geometry of this layout to eliminate any tendency to rear-end steering. The frame attachment points of the radius rods have been determined so that deflections are neutralized to the greatest possible extent. Four vertical coil springs enclosing telescopic shock absorbers provide enough softness to give a comfortable ride and a wheel travel short enough to retain basic geometry with ½° to 1° of negative camber. When we say that not only has this aim been accomplished but that bottoming can hardly be provoked either, readers will realize that the XK-E presents an important advance in independent rear suspension. Further data on the car and the system was contained in the May, 1961 CAR AND DRIVER.

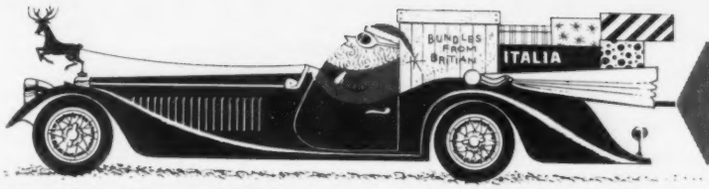
Well sprung for a sports car, a good combination of softness and stability, the XK-E shows some slight choppiness from small bumps at speeds up to about 50 mph. Over that, the feeling to occupants is one of almost uncanny smoothness and sure-footedness. Rutted dirt roads feel paved with virtually no jarring of the occupants, who are located close to midships.

Tire pressures would affect the ride to some extent. With 30 psi in the front tires and 35 psi in the rear ones, road shocks were felt in the entire car and the reactions in the steering wheel were amplified. A reversion to pressures recommended for normal driving (23 and 25, front and rear, for speeds up to 130) would provide enough softness in the tires to let them work as a springing medium, absorbing minor unevenness in the road surface at only slight loss of steering lightness.

The RS5 Dunlop tires tracked straight with silence on all but rough concrete surfaces, when considerable whine was apparent. On most corners they remained quiet but with high cornering forces they wailed loudly. Rain seemed no deterrent to high cruising speeds.

With all the power available, the risk of wheelspin would be considerable with previous Jaguar rear ends. The E-Type, as a further safeguard in this respect, has a Powr-Lok differential. The only wheelspin we experienced was provoked by high-rpm starts with ultra-rapid clutch release and, in fact, using worn tires. Even so, spectators confirm that

(Continued on page 88)



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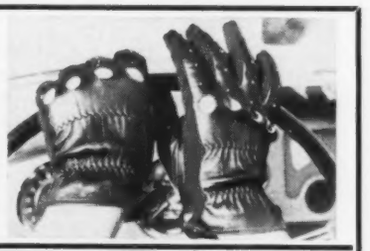

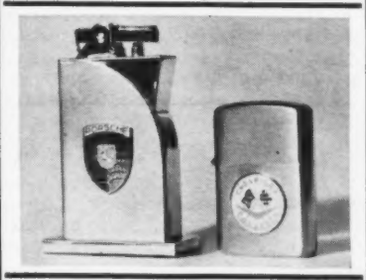

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(Continued from page 86)

both rear wheels were spinning and the only driver action required was minor corrections to counteract gentle snaking.

WEATHERPROOFING

Not everything in the E can be soundly praised. Our car had chassis number 12 and had been used as a demonstrator so our remarks here may not be typical of the current production E-Type. The basic car is excellent, so fine in fact that even minor annoyances you'd accept in a lesser car seem magnified to disturbing proportions. The fit and finish of the panels is exemplary. We mentioned the seats and stated that this area of discomfort has apparently already been remedied. We expect as the E-Type evolves it will become one of the world's truly great cars from any standpoint. However, we found rain leakage to be considerable over the top of the windshield, under the cowl and at the edge of the doors. The trunk also was afflicted with leaks which filtered water down into the spare tire well (an apt term) from which it could not escape due to the lack of drain holes. Ventilation with the top up was poor; the side windows needed to be opened almost half-way with the result that there was a blast of air striking the occupants in the car. With the top down, wind noise was very low at any speed and there was very little buffeting in the cockpit.

Trunk space is limited largely by the shape: wide and flat. A couple of suitcases will fit in but must be quite thin. The push-button door latch has a handle that will only accommodate finger tips. The doors themselves open wide, clearing high curbs, but a little practice is needed before the side members can be hurdled gracefully. Once inside you have the feeling of the car being built around you, a snug but not restrictive fit.

The heater worked well, although we didn't encounter any really cold weather, but defrosting left a lot to be desired in spite of the great number of ducts. The three-bladed wipers gave a good sweep but on our car the driver's blade was defective and only smeared the glass. Furthermore the two-speed wipers could use a faster high speed for heavy rains. Smokers will want to install another ash tray to supplement the small capacity and inconvenience of the built-in receptacle. The cigarette lighter is located next to the starter button which is also round and black so a glance in that direction would be wise before pushing anything. The minor controls are efficient in their layout and operation and if you forget which toggle does what, you can read the illuminated strip beneath them.

EASY SERVICE

As is well known, the whole nose section of the car hinges forward to reveal the powerplant. Accessibility to the engine and its accessories is excellent and that old Jaguar mechanic's bugaboo "I'd fix it if I knew where it was" should be forever buried. The Champion N-5 plugs (N-3 for all-out efforts) are right on top of the engine. Shielding from dust and water is good. The engine compartment kept remarkably clean in spite of driving through a number of deep puddles and dusty stretches, but under torrential conditions water will get at the Lucas distributor located at the right front of the engine.

The three SU carbs are almost at waist height for easy maintenance and the cross-flow radiator has a separate header tank that's also accessible. The battery is mounted in its own compartment on the left rear side of the engine room away from most of the heat and fumes. Master cylinders and reservoirs are easily checked. The engine should be almost as easy to remove as a Volkswagen's and leaves the car with the transmission from underneath in VW fashion.

Front end parts, looking almost spidery-thin, are easy to reach for lubrication. In fact the only item that is even partly elusive is the oil filter located on the lower right side of the engine, underneath the carb air cleaner assembly. Removal of these things should ease the filter change job. Ducts are built into the hood to direct cold air to the carbs and cockpit vents. The car has 22 grease points and it seems that the trend toward "sealed-for-life" fittings does not go over in Coventry the way it does in Detroit. One item that requires no maintenance is the Lucas fuel pump which replaces the SU unit familiar on all previous XK-series Jaguars. It's completely sealed and is submerged in the fuel tank. Delivery pressure is pre-set during manufacture and since no vacuum can occur at the intake port, the pump can maintain constant pressure on the delivery side.

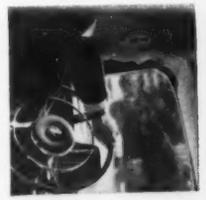
INTERIOR EQUIPMENT

The plastic hoods over the headlights give the E-Type an air of mystery at night. Putting in a good deal of night driving, and encountering a variety of traffic and road conditions, we learned to appreciate all the little luxuries which adorn the cockpit, some of which may pass unnoticed on a short run. These include the headlight flasher, windshield washer, anti-glare rear view mirror, variable instrument lighting, all standard equipment but often taken for granted in fast cars. The instruments themselves add to the pleasure of driving the car and are as complete as you'd want, as may be seen from the dashboard diagram.

Bumper protection at the front is negligible and the rear isn't much better, but it's nice to be able to see what a car looks like without heavy, if practical, bumpers. The XK-120, you will recall, began its life the same way with handsome, flimsy bumpers and before the 150 came out, sensible armor had been mounted. The centrally located dual tailpipes under the upturned tail end just at the edge of the car. Smoke and soot soon cover the license plate, its lights and the back-up light, so these need to be cleaned every 500 miles or less.

ENTHUSIASTS UBIQUITOUS

To say the E-Type attracted interest wherever we went is a gross understatement. Men and women in all age and income groups pressed us with questions: What kind of car is it? How fast will it go? Did *you* drive it that fast? How much does it cost? More knowledgeable types had questions about the horsepower and torque, the handling, the ride, etc., etc. We visited the New Hope, Pennsylvania annual concours and were literally swamped by interested observers. The E-Type is that kind of car. One bystander commented, "These will be seen all over pretty soon, so I guess I'd better get something else." The E-Type is not *that* kind of car. It is a great crowd drawer and can be a terrific ego booster, but if you want to get away from it all, we can't think of a nicer way to go. —*C/D*



MERCEDES BUILDS A BRAIN BOX

Continued from page 41

determines which two gears are available to the driver at a given moment. More important, the driver has complete control over the box through a steering column lever and a small, rectangular indicator on the dash. In positions "3" and "2" he can hold the transmission in third and second gears respectively, to whatever revs he chooses. There's no automatic upshift to overrule the driver's desires. In "2" position, specially laid out for hauling trailers up alpine passes, the box will shift back and forth between low and second at part-throttle according to load. In positions "4" and "3" the car normally starts in second gear, to minimize creep, but first can be engaged by stomping down all the way.

Mercedes philosophy of design for the driver shows in this unlimited hold in each gear; it also shows in the arrangement of the brake pedal. Some years ago Uhlenhaut said that he felt it was unwise to encourage drivers to learn to brake with their left foot in an automatic car, as it would lead them astray when they sat in a stick-shift car again. Correct or not, the 300SE has a normal brake pedal that's definitely placed next to the accelerator.

On the road the Daimler-Benz automatic transmission is hard to fault. There is fairly strong creep at idle with the indicator at "4", but not much more than in current U.S. cars. Actual movement of the shift lever was more awkward than we expected, being a bit stiff and clumsy at first acquaintance. Experienced factory drivers coped superbly. The automatic upshifts are certainly noticeable—more so at higher speeds—but not at all objectionable. At full throttle the upshifts take more than a second or two to go through, reflecting the solid, direct drive supplied by the hydraulic coupling. Uhlenhaut told us that this transmission costs only 8 bhp at peak engine revs.

The new engine is responsive and flexible with more than enough power for this modern-day "Grosser Mercedes." Fuel consumption is not startling with 16.2 mpg at a steady 68 mph dropping to 14 mpg as the right foot gets nearer the floor. However, this is a luxury car and tycoons needn't worry about mpg.

The power steering is very good. Standard on the 300SE, and an option on the 220SE, it is beyond criticism. Servo assist is progressive and preserves, to a large degree, road feel. The 300SE can be U-turned or parked with very little effort, while it can still be drifted through a bend at 75 mph with complete confidence.

The new box is standard equipment on the new 300SE, which qualifies handsdown as the world's most luxurious compact with its servo disc brakes, air suspension, power steering and the new aluminum-block three-liter six that we discussed under "New Engines" last month. This car probably won't be in full production for a few months—and not many will be made anyway—but the automatic transmission should be available now on the 220 series. Price? $350, which many M-B buyers will plunk down willingly for this most-controllable brain box.

—*KEL*

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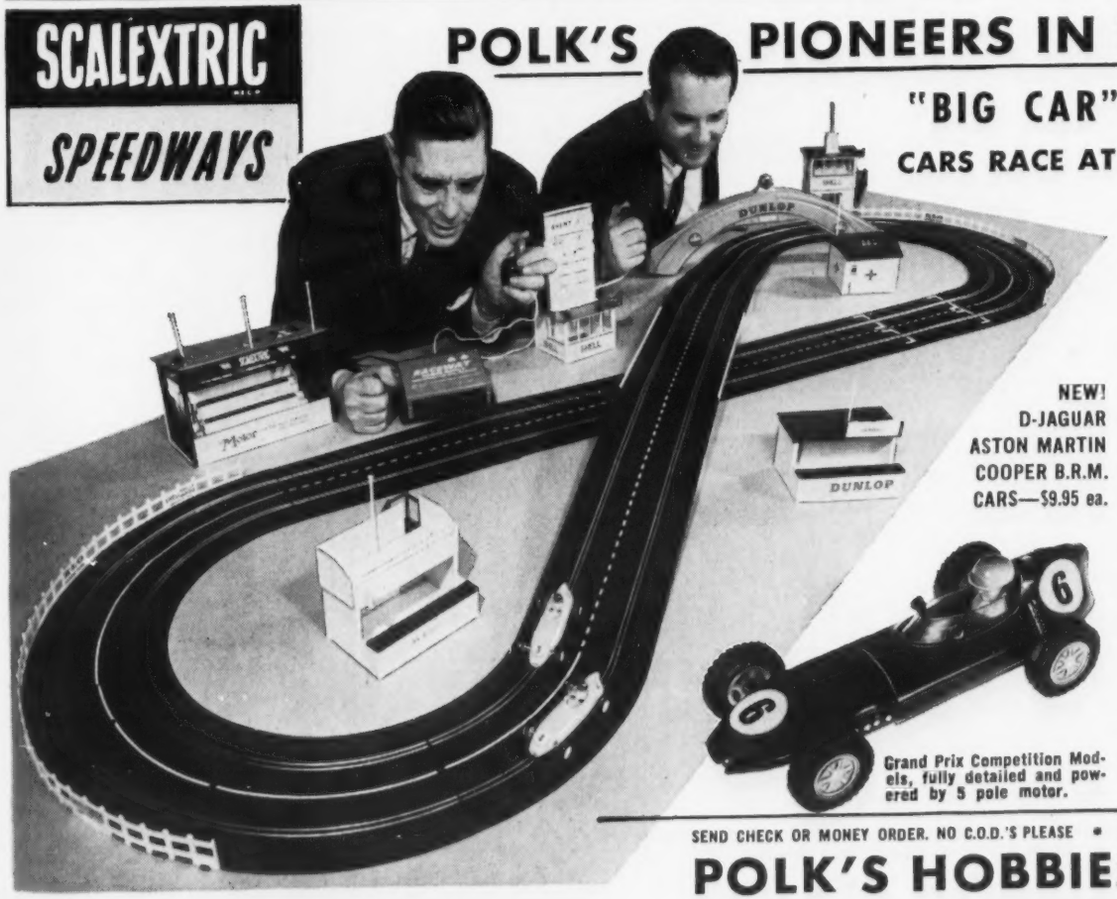

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JOEL WOLFE THORNE

Continued from page 67

number of races to get seasoning for the Brickyard. Aside from lackluster performances at New Roby, Goshen and Springfield, his only notable finish came at Pikes Peak. There he drove his dirt-track Miller up the slope to fourth place.

During this training period, Joe courted a lovely Georgia-reared Powers model named Johnsie Eager and married her in November of that year.

At the Speedway in early May, 1937, Thorne met Art Sparks, a tall, talented builder of race cars from Glendale, California. Sparks, who was a machine shop teacher at Glendale High School, had brought with him an automobile that immediately caught Joe's eye.

It was a long, narrow car with a 337-cubic-inch supercharged straight-six d.o.h.c. engine that developed 500 bhp at 5000 rpm on *pump* gasoline (which was required in 1937 at Indy). Joe made a verbal deal to buy the car. Jimmy Snyder was again given the driving assignment while Chickie Hirashima, the now-famous crew chief and Offy tuner, was taken on as riding mechanic.

With one car in his stable, Joe toured Gasoline Alley to buy more. The pits and garages buzzed about this towering kid who wrote spur-of-the-moment checks on napkins, bits of paper and handkerchiefs for the equipment he wanted.

As time trials approached, he had accumulated Floyd Roberts, Al Miller and Floyd Davis with a trio of four-cylinder Millers, Zeke Meyer and an ancient Studebaker, Snyder and the Sparks and, for himself, a 220 front-drive Offy.

Qualifications brought mixed blessings for Equipe Thorne. Emotions ranged from dizzy hilarity when Snyder destroyed both the one and ten-lap records during his trial, to despair when the boss himself turned in a mediocre 115.607 mph official clocking. Roberts, Miller and Davis made the race while Meyer's Stude was an outright failure.

When qualifying ended, Joe was the second alternate starter. Then first alternate "Red" Shafer withdrew, leaving him 34th. In a last-ditch effort to make the race, Joe looked up George Lyons of Chicago, the owner of the Midwest Red Lion Special. Joe had heard that Lyons wanted to dump the car, which had been qualified by Cliff Bergere, and offered him $5,000 on the spot. Lyons accepted.

Joe immediately announced he was withdrawing the Red Lion Special and substituting his Offy in the lineup. Bergere, who found himself benched in the shuffle, was understandably peeved. The hassle was brought before track owner Eddie Rickenbacker and quickly resolved: Thorne could not switch cars.

"If you want to run in this race, you can damn well get out there and qualify like the rest of the drivers," Rick said to Joe.

"Keep up the tough talk and I may buy the whole blasted starting field and watch you guys sweat on race day," snapped Joe.

"Try a stunt like that," said Rickenbacker, who was one of the few men around nearly tall enough to look Joe square in the eyes, "and you'll run your next AAA race when you're 97!"

His bluff thus called, Joe generously offered Bergere 25 percent of the winnings to drive for him (the going share for drivers was 40 percent). Bergere refused and Joe relented, granting him the standard split.

The race started with Joe sulking in the pits . . . that is until Snyder bellowed into the lead a few moments after the flag fell. He opened the gap with ease until the 28th lap, when a broken transmission put him out of the race.

The rest of the team tried. Miller struggled through seven pit stops before retiring on the 170th circuit. Davis stopped five times before crashing on the 190th. Roberts, who would win the following year, nursed his car home 12th.

Bergere finished a creditable fifth, but it wasn't much help to Joe. His check had bounced (a standard Thorne failing) and the prize money and errant car were returned to Lyons.

Out of the tumult of 1937 one fact became clear to Joe: the 500 could not be overwhelmed by a massed frontal assault. Fast, quality machinery was needed. And in Sparks he figured he had just the man to supply him with the necessary equipment.

After hiring Sparks, Joe spent the summer racing. He took a fifth at Pikes Peak and set the slowest qualifying time for the Syracuse, New York 100-miler. The high point of the season came with an old Alfa at the Vanderbilt Cup Race.

Probably a share of his winnings gained in that memorable event, for being sixth overall and the second American to finish, helped to repair his 812 Cord. Joe had been demonstrating this vehicle at Roosevelt before the race and managed to bend it seriously during a wild spin-out.

September 1, 1937 marked the beginning of the Thorne Engineering Company. On that date a giant warehouse on Slauson Avenue in Los Angeles was leased as a site to build racing cars.

To run the company, Sparks had been signed to a *lifetime* contract. Art was to receive $200 per month *plus* expenses, $100,000 in life and health insurance until age 75, 10 percent of all Speedway winnings, 15 percent of all other prize money and five percent of the company's gross profits. Not bad for a start.

Joe spent $125,000 outfitting the Slauson Avenue shop. Complete facilities for patternmaking, tooling, machining and testing were installed. To keep close to the operation, Joe had an apartment built on the roof. The quarters had a big picture window that looked down into the shop so that he could relax by the fire and watch his cars take shape.

"This was the kind of extravagance that made Joe look like a complete nut," says an old racing associate. "But don't for one minute think he didn't know what he was doing.

"He had the idea that his money would buy anything while at the same time it excluded him from following the rules. Joe honestly didn't give a hoot what most people thought of him and he acted accordingly."

The plan of Thorne Engineering was to build a pair of three-liter, supercharged straight-sixes to conform with the 1938 FIA formula. To implement this, Sparks rounded up some of the top mechanical talent in racing. Joe Petrali and Eddie Offut were hired as foremen; Clyde Adams came on to do the bodywork.

In all, 18 men worked the day shift and nine more labored through the night. Two draftsmen and a pair of office helpers rounded out the staff.

With the magnesium cylinder blocks cast by Dow Chemical, the engines were ready for testing in seven months. They easily cranked out 365 bhp at 6500 rpm. Powering 105-inch-wheelbase cars weighing 1845 pounds dry, the big sixes were truly classic milestones in the development of Speedway equipment.

Joe wisely decided his limited experience precluded an immediate leap into his new toys. Snyder was hired to drive one while all-time midget racing great Ronnie Householder got the other. Joe entered his 220 Offy and a second four-banger was assigned to Billy DeVore.

Snyder and Householder quickly found the new cars would go like sin. Both were clocked through Bud Winfield's unofficial speed trap on the back stretch at over 174 mph (today's best Meyer-Drakes do very little better).

Exactly how much Joe's friendly inducement to "qualify faster than I do or you're fired," helped, is not known, but Householder set an absolute 10-lap qualifying record at 125.769 mph (which still stands because the Speedway adopted the four-lap trial the following year). Snyder was fourth fastest with 123.506 mph while Joe was in comfortably at 120.240. DeVore sneaked in with 33rd "fastest" time.

As expected, Snyder and Householder disposed of the opposition early in the race and moved into a commanding lead. Then Snyder retired at 375 miles and Ronnie lasted but four laps longer. Both cars went out with identical failures; the hoses connecting the blowers with the intake manifolds broke in the same place.

DeVore and the boss cruised to take eighth and ninth places. During the race Joe reported the goings-on to Sparks in the pits via ham radio channel W9XSA, which he had installed in the cockpit of his Offy.

The sixes were returned to Los Angeles for modifications. In July, 1938 the organization moved into a bigger plant on San Fernando Road and work was begun on a third car. The monstrous 1937 machine was given a new block and crank to reduce it from 337 to 271 cubic inches. The blower was scrapped and Adams converted the two-man body into a single-seater. This "big-big" six was for Joe. Snyder was reassigned to one of the blown cars while the great Rex Mays took Householder's place. Mel Hansen was given Thorne's old car, now equipped with a 270 Offy.

As the 1939 race got underway, Snyder leaped into the lead and opened a wide gap on the field. He drove unmolested for the first 100 miles before making a pit stop. Then, in one of the most memorable assaults in Speedway history, he charged back into first place, passing the other two contenders, Wilbur Shaw and Lou Meyer, with ease. Unfortunately another long stop ended his domination of the race and he finished second to Shaw and his new Maserati.

In complete opposition to his erratic behaviour off the track, Joe acquitted himself beautifully in his second 500. Seemingly an ideal personality to display complete idiocy behind the wheel, Joe was surprisingly consistent. Driving conservatively, he picked his way to seventh place by the end of the race. The rest of the team did not fare as well: Mays retired with valve troubles, Hansen rammed the pit wall during an overhasty stop.

The summer of 1939 brought triumph and tragedy to the Thorne Engineering Company. Joe made his best run up

(Continued on page 92)

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(Continued from page 90)

Pikes Peak to finish third. He also came home 9th in a 100-mile race at Milwaukee. But those successes hardly compensated for the loss of Jimmy Snyder. The universally-admired pilot was killed in a midget race in East St. Louis, creating an unfillable void in the cramped cockpits of the Thorne Engineering Specials.

Sparks told the press the blown cars would not be entered in the 1940 race out of respect for Snyder. Although this had a bearing on the decision not to run, the growing dispute between Joe and Sparks was probably a more influential factor. Joe wanted to stand pat with the cars while Sparks, realizing they were almost three years old, wanted to make modifications. In the midst of the squabble, the cars never made it to the track.

Thorne entered his 4.5 six and continued his surprisingly reliable driving by finishing fifth. This was to be his high-water mark in the 500.

One blown car was readied in 1941 for Ted Horn while its sister remained partially assembled on the West Coast. Joe returned with his car. Horn had trouble finding the groove with his cranky beast (while terribly fast, they were notoriously hard to handle in the four Indy curves). He finally qualified on the last day and started in 33rd place.

Joe lasted four laps. Two cars spun in front of him and he smacked the wall trying to avoid the mess. He was unhurt. During the race Horn learned the whims of his petulant mount and steadily advanced on the front-runners. When the race ended he was in third place.

The bombing of Pearl Harbor ended racing and the Thorne Engineering Company transferred to war work for Lockheed Aircraft. The two 183s and Joe's oversized mate were covered with tarps for the duration.

Joe was classified 4-F and remained in Los Angeles. While tending to things at the plant, he took it upon himself to improve the war morale of one of his young secretaries. Unfortunately she misinterpreted this patriotic gesture and slapped him with a $60,000 suit "for humiliation suffered during four months of resisting his love-making."

At the same time relations between Sparks and Thorne became critical and in 1943 the two parted. Sparks tried to hold Joe to the letter of his lifetime contract without success and the case was taken to court for settlement.

To add to his headaches, Joe's wife tired of his one-man morale-building campaign and sued for divorce in 1944. She asked custody of their new-born son, Jonathan, $60,000 alimony per year and a share of Thorne Engineering, then valued at $300,000.

The judge granted the ex-Mrs. Thorne an initial $750 per month but Joe ignored the edict. A few days later he made a full-throttle exit from a gas station on his big Ariel motorcycle . . . smack into the side of a passing car. He was taken to the Cedars of Lebanon Hospital with multiple fractures.

Before the court could act, some friends smuggled him, complete with plaster casts, by plane to Las Vegas. His ex-wife countered with suits in Nevada and New York. He was dumped in jail, where he sat for four days. Finally Joe realized no one was in a great rush to get him out and he came across with the first alimony check and $75,000.

The three court fights left Joe hurting financially (actual physical pain was added when Joe had his jaw broken in a New York night club brawl. His date took a hefty swing at the bouncer, he ducked, she caught Joe flush on the chin). Under the provisions of his complicated trust funds, the principal of the fortune was tied up in the Hanover Bank & Trust Company in New York. Joe could only get at a monthly interest payment and began finding himself constantly overdrawn.

Not the type to consider retrenching, he dumped Thorne Engineering for $150,000 to get ready cash. He also tried to *sell* one of his trust funds, worth over a million dollars, in a straight cash transaction. The stunned administrators of the estate of course vetoed the deal.

With the war over, one of the blown machines was sold to a Los Angeles syndicate. Joe kept the two remaining cars and entered them in the rag-tag field of the 1946 500. English-born George Robson was given the three-liter car and made the race. Joe broke his leg in another motorcycle wreck and was out of the running.

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ON SALE: NOVEMBER 28

Because racing in Europe was still dormant, Mercedes-Benz ace Rudi Caracciola was on hand to give the 500 a try. With his car, a 1.5-liter W165 Mercedes-Benz, tied up in customs, Joe offered him the wheel of his 4.5.

After a hassle over whether Caracciola would be allowed to drive with his customary linen helmet, he took to the track for a practice run. He was wearing a World War Two tank driver's helmet dug up at the last minute by AAA Contest Board Chairman Col. Arthur Herrington.

It was late in the afternoon as Caracciola gave the big Sparks full throttle and exited from the southeast turn. Suddenly the blue car lurched sideways and slammed into the retaining wall. It rode the barrier for a way, then flopped onto the track, spilling Rudi out on his head. The five-time European champion was rushed to the hospital with grievious injuries. His doctors agreed that without the crude old tank helmet, Rudi's gainer onto the Speedway asphalt would have meant sure death.

A curious footnote to this incident can be found in the official Speedway report made by AAA observer L. W. Welch: "About five minutes before the accident, Joe Thorne attempted to engage me in an altercation, insisting that the driver be permitted to go on the track with only a linen helmet on his head." Had Joe won that argument, Rudolph Caracciola would have terminated his career well ahead of schedule.

Joe's triumph came at the Speedway when he least expected it. Before the war, he had employed men like Mays, Snyder and Horn and had failed to win. Now in 1946 his man George Robson, a nonentity who had never finished a 500, drove the eight-year-old Thorne Engineering Special to victory. Admittedly the winning pace of 114.820 mph was a modest one, clouded with official protests that Robson had not gotten out of the car during one of his pit stops (then a rule), but he had won and that was all that mattered to Joe. Robson's jubilation was dampened considerably when he discovered that Joe was only paying him 33⅓ percent of the winnings.

Despite the big victory, money remained the central problem in Joe's life. With alimony payments, etc. the fat was being trimmed from his allowance before he could create any sort of reserve for another major plunge into racing.

It even hurt when he was fined $500 by a California judge for shooting birds while roaring along in his Packard convertible. And the better Indianapolis hotels tired of his credit to a point where he spent the month of May, 1947 quartered in a City firehouse on Capital Avenue.

The 1947 Indy excursion was hardly worth the effort. Neither car could be readied for a qualification attempt and Joe reportedly returned to his digs in Las Vegas on a cross-country diet of dog food! Apparently no one was willing to honor checks written from the big, accountant's-sized checkbook belonging to McCarren Airfield, Las Vegas (with which he had no official connection) that he carried everywhere with him.

Finances cramped tighter in 1948 and he sold the other blown car. He kept the 4.5 and entered it for one last try. In the aforementioned coal bin, he lived from a gigantic suitcase stuffed with shirts, pants, and a liberal assortment of pistons, valves, gaskets, etc. Joe either went first-class or steerage. There was no in-between for him.

Although his Sparks still had plenty of power, the ancient car, which pitted transverse leaves against torsion bars, was sadly outclassed. When it failed to reach qualifying speeds in 1948, he knew it was ready for honorable retirement.

By this time he and his car were out of the news. Magic names like Novi and Blue Crown were dominant, along with a mysterious German car owned by Tommy Lee. That machine was of course his ultra-rare W163 Mercedes-Benz G.P. car. Duke Nalon had driven it in the 1947 500, Chet Miller the following year. On both occasions it indicated great potential but retired shortly after the half-way point. A primary problem was finding proper fuel mixtures and jet combinations for the fiendishly complicated V12.

When Lee died in early 1949, Joe bought the car from his estate. In a swift move, he solved the Merc tuning problems by pulling the V12 and substituting his reliable old Sparks six. From a practical aspect, this may have been a wise move, but esthetically it was murder. By installing the high, narrow six in place of the low, squat vee, the rakish hood line took on an obscene bulge. For good measure Joe bobbed the classical Mercedes nose and snipped away large hunks of cowling around the cockpit to accommodate his huge frame.

A wild attempt was made to fit a tuned exhaust to the old Sparks engine. Someone calculated the optimum length for scavenging would be 17 feet. Obviously such a dimension prevented the pipe from running straight back from the manifold, so the Merc was fitted with a weird, curving exhaust that ran forward, looped down and around the right front axle and made its way aft. It was 17 feet long to a millimeter, but an improvement in performance was hardly noticeable.

The crowning indignity to the car was the attachment of a custom-made white rubber steering wheel. This feature was a source of everlasting delight for Joe and was the first thing he pointed out to stunned onlookers.

In 1949 the Mercedes-Sparks was as slow as it was ugly. Joe tried the same combination in 1950 with similar results and sold the car.

In 1951 he ran Pikes Peak but failed to finish. On July 8 of the same year he created universal alarm in the car rental business when he took loan of a new Cadillac and drove it in a 150-mile *stock car race* at the Milwaukee State Fairgrounds!

As the years advanced, Joe's projects became restricted to lengthy verbal exercises. He seemed unwilling to risk the humiliation of more half-way measures like the Mercedes, but lacked the resources to launch another spectacular enterprise like Thorne Engineering. Never again did a car bearing the blue tones of the Thorne stable roll onto the Speedway pavement.

But there were ideas aplenty. In 1953 he announced plans for a new sports-racing car. The machine was to have been four-wheel-drive, powered by a rear-mounted, air-cooled aluminum flat-six of 4.5 liters. The all-independent suspension was by torsion bars, the frame of stressed monocoque construction. Twelve-inch discs mounted inboard formed the braking system.

With an expected 380 bhp @ 6800 rpm hauling a car that was to weigh 1250 pounds dry, Joe would have had an imposing automobile. Leo Goossen was approached about engine design but the project bogged down when estimated costs reached $200,000.

In 1954 he tried to talk a few of his old mechanics into outfitting his venerable Sparks for a go in the Mexican Road Race. No one was much interested.

On the evening of October 17, 1955 Joe was in Burbank, California waiting for foul weather to clear so he could hop to Las Vegas in his Beechcraft Bonanza. Growing impatient, he lifted off the runway of the Lockheed Air Terminal and into the black night. Flying without an instrument rating, he lost his bearings over North Hollywood and rammed a two-story apartment building. Four persons, including Joe, were killed instantly. Six others were critically injured.

Beside his piles of untouchable money, Joe didn't leave much behind. Art Sparks, now the successful head of Forge True Pistons in Pasadena, still preserves the blueprints for the cars, plus some tooling and engine parts.

One of the blown cars is on the West Coast while the other is on exhibit at the Indianapolis Motor Speedway Museum. There it sits today, seemingly ready to go out on the nearby back chute and blow off some upstart Meyer-Drake. Until something better comes along, that big six must serve as the memorial for one of motor racing's most wonderful characters. —BY

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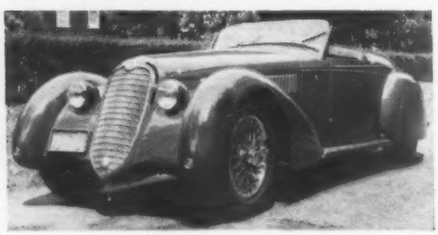

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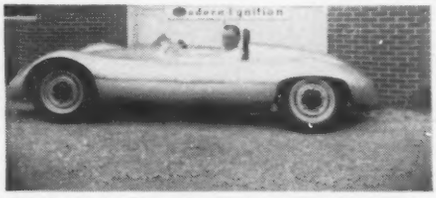

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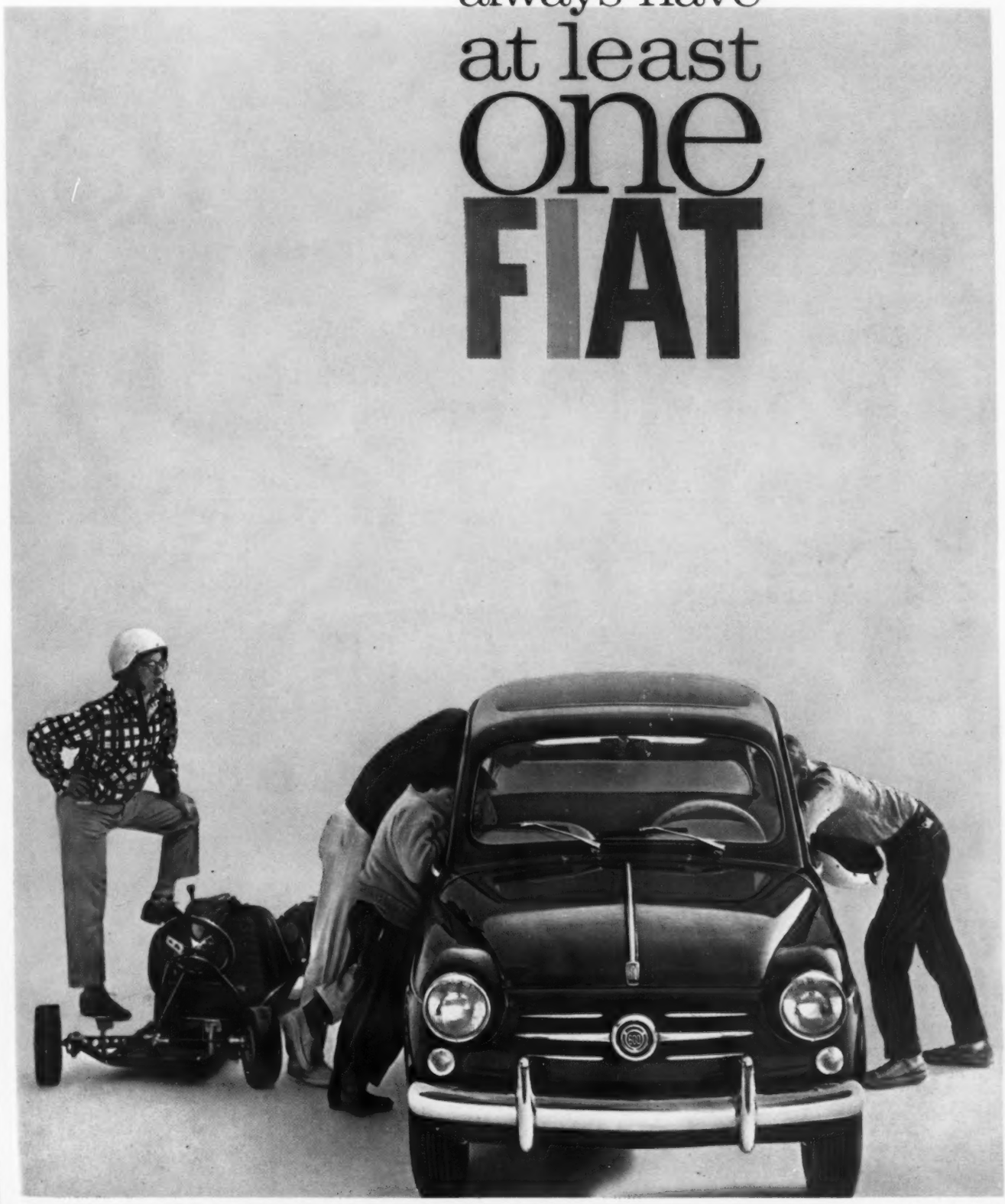

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